VPDES PERMIT FACT SHEET

This document gives pertinent Information concerning the reissuance of the VPDES permit listed below. This permit is being processed as a Minor**,** Municipal permit. The effluent limitations contained in this permit will maintain the Water Quality Standards of 9 VAC 25-260 et seq. The discharge results from the treatment of domestic sewage generated at the DOC Haynesville Main Prison and Old Camp 17. This permit action consists of adding fecal coliform, enterococci and zinc limitations, decreasing copper limitations and updating special conditions.

1.	Facility Name and Address:	Haynesville Correctional Center
	Physical:	650 Barnfield Road Haynesville, VA 22472
	Mailing:	P.O. Box 129 Haynesville, VA 22472
	SIC Code:	9223, Correctional Institutions
2.	Permit No.	VA0023469
	Existing Permit Expiration Date:	7/7/10
3.	Owner:	Virginia Department of Corrections
	Contact Name:	Timothy G. Newton
	Title:	Environmental Services Administrator
	Telephone Number:	(804) 674-3303, ext. 1195
	Address:	6900 Atmore Drive Richmond, VA 23225
	Facility Contact Name:	Dallas Phillips
	Title:	Environmental Services Manager
	Telephone Numbers:	(757) 925-2212 ext. 5012
	Address:	Virginia Dept. of Corrections, ERO 1001 Obici Industrial Blvd., Suite F Suffolk, VA 23434

4.	Application Complete	Date: 12/21/09 (administratively) Date: 1/12/10 (technically)
	Permit Drafted By: Emilee Carpenter Piedmont Regional Office	Date: 5/19/10
	Reviewed By: Gina Kelly	Date: 7/22/10
	Curt Linderman	Date: 11/2/10
	Charles Stitzer	Date: 11/5/10
	Allan Brockenbrough	Date: 11/19/10
	Public Comment Period Dates:	From: 12/29/10 to1/28/11
	Publication in *Westmoreland News*	Dates: 12/29/10 & 1/5/11

5. Receiving Stream Name: UT to Marshy Swamp
River Mile: 3-XAR001.00
Basin: Rappahannock
Subbasin: NA
Section: 2
Class: III
Special Standards: none

7-Day, 10-Year Low Flow:	0.00 MGD	1-Day, 10-Year Low Flow:	0.00 MGD
30-Day, 5-Year Low Flow:	0.00 MGD	Harmonic Mean Flow:	0.00 MGD
30-Day, 10-Year Low Flow	0.00 MGD		
Tidal?	NO	On 303(d) list?	YES

The receiving stream is intermittent and, therefore, is expected to have zero low flows under permitted design conditions. Refer to Flow Frequency Memo in **Attachment A**. The identified receiving stream is changing in this reissuance from Garland's Millpond, UT to Marshy Swamp, UT. This change is attributed to increased resolution of GIS layers from the National Hydrography Database (NHD), which allow more specific identification of the receiving stream. The actual outfall has not moved.

6. Operator License Requirements: Class II.

7. Reliability Class: Class I.

8. Permit Characterization:

( ) Issuance	(X) Existing Discharge
(X) Reissuance	( ) Proposed Discharge
( ) Revoke & Reissue	( ) Effluent Limited
( ) Owner Modification	(X) Water Quality Limited
( ) Board Modification	( ) WET Limit
( ) Change of Ownership/Name	(X) Interim Limits in Permit
Effective Date:	( ) Interim Limits in Other Document (attached)
(X) Municipal	(X) Compliance Schedule Required
SIC Code(s): 9223	( ) Site Specific WQ Criteria
( ) Industrial	( ) Variance to WQ Standards
SIC Code(s):	( ) Water Effects Ratio
(X) Publicly owned	(X) Discharge to 303(d) Listed Segment
( ) PVOTW	( ) Toxics Management Program Required
( ) Private	( ) Toxics Reduction Evaluation
( ) Federal	( ) Possible Interstate Effect
(X) State	( ) Storm Water Management Plan

9. Discharge Description

Table I. Discharge Description

OUTFALL NUMBER	DISCHARGE SOURCE	TREATMENT	FLOW
001	Main Prison (Existing): 1442 inmates and employees domestic sewage	Screening, grit removal, inline shredder, 2 Sequencing Batch Reactors (SBR) (includes sludge wasting), ultraviolet disinfection, cascade aeration. Aerobic sludge digestion.	0.150 MGD Total Flow: 0.150 (BNR) + 0.028 (Oxidation Ditch) = 0.178 MGD
	Main Prison (Upgrade): 1442 inmates and employees domestic sewage	Bar Screen, Influent Auger, Influent EQ, 4 Sequencing Batch Reactors (SBR) (includes sludge wasting), phosphorus removal, Tertiary Filtration, Chemical Treatment (for Metals), UV Disinfection, and cascade aeration. Aerobic Sludge Digestion, Dewatering in Drying Beds and filter press.	

OUTFALL NUMBER	DISCHARGE SOURCE	TREATMENT	FLOW
101 (Internal)	Old Camp 17 Unit: 154 inmates and employees domestic sewage	Emergency holding basin, manual bar screen, influent wet well, oxidation ditch with aerated sludge, chlorination/dechlorination, joins the effluent from the main prison prior to cascade aeration	0.028 MGD
102 (Internal)	Same as 001	The internal outfall provides a sampling point to demonstrate compliance with nutrient concentration limits that are assigned based on installed technology at the SBR facility.	0.150 MGD

Refer to **Attachment B** for a facility diagram. The Department of Corrections (DOC) intends to decommission the Oxidation Ditch at Old Camp 17 during the 2010 permit cycle. There is an approved plan to install a force main between the two facilities that would transport raw sewage influent from the existing Oxidation Ditch facility to the new SBR plant. However, the decision to install the force main is stalled while the DOC decides whether to decommission Old Camp 17 altogether, in which case no sewage would be generated and a force main would be superfluous. In the interim, internal outfalls distinguish the two facilities.

10. Sludge Use or Disposal: Sludge from the SBR Units is aerobically digested, dewatered in drying beds and disposed in a landfill. The dewatered sludge is hauled in a covered, watertight vehicle from US Route 360 West → State Route 30 South → State Routes 33/64 West → State Route 106 South. Land application of the sludge at the Southampton Correctional Center is being considered as a future alternative. The Sludge Management Plan will be revised and submitted for DEQ approval prior to changing sludge management activities.

11. Discharge Location Description: Topographic Map #146B: Haynesville. Refer to **Attachment C**.

12. Material Storage: Chlorine, sulfur dioxide, and polymer are stored under roof in such a manner as to prevent a discharge. Cylinders are secured and stored separately with adequate ventilation and alarms that meet safety requirements.

13. Ambient Water Quality Information: Water quality data is not available for the unnamed tributary to Marshy Swamp. The receiving stream is an intermittent tributary and would be expected to consist entirely of effluent under 7Q10 conditions; therefore, effluent data was deemed equivalent to stream data when evaluating permit limitations.

14. Antidegradation Review & Comments:
Tier: 1 _X_ 2_____ 3_____

The State Water Control Board's Water Quality Standards includes an antidegradation policy (9 VAC 25-260-30). All state surface waters are provided one of three levels of antidegradation protection. For Tier 1 or existing use protection, existing uses of the water body and the water quality to protect these uses must be maintained. Tier 2 water bodies have water quality that is better than the water quality standards. Significant lowering of the

water quality of Tier 2 waters is not allowed without an evaluation of the economic and social impacts. Tier 3 water bodies are exceptional waters and are so designated by regulatory amendment. The antidegradation policy prohibits new or expanded discharges into exceptional waters. The limitations in this permit were developed in accordance with § 303(d)(4) of the Clean Water Act. Therefore, antidegradation restrictions do not apply.

The antidegradation review begins with a Tier determination. The unnamed tributary to the Marshy Swamp is determined to be a Tier 1 waterbody. This determination is based on the intermittent nature of the stream where beneficial uses cannot be fully attained.

15. Site Inspection: Date: 9/1/2010 Performed by Emilee Carpenter.
See **Attachment D.**

16. Effluent Screening & Limitation Development:
See **Attachment E** for DMR data and effluent application data. See **Attachment F** for the effluent limitation analysis, including MSTRANTI with a Data Source Report, and STATS analyses.

Table II. Effluent Limitations Summary for Outfall 001

CEDS Code	PARAMETER	BASIS FOR LIMITS	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
			MONTHLY AVERAGE	WEEKLY AVERAGE	MIN	MAX	FREQ	SAMPLE TYPE
001	Flow (MGD)	NA	NL	NA	NA	NL	Continuous	TIRE
002	pH (s.u.)	1	NA	NA	6.0	9.0	1/Day	Grab
003	BOD_5 (mg/L)	3	15	23	NA	NA	3 Days/Week	8 HC
004	TSS (mg/L)	3	15	23	NA	NA	1/ Month	8 HC
007	Dissolved Oxygen (mg/L)	4	NA	NA	5.5	NA	1/Day	Grab
012	Total Phosphorus – P (mg/L)	5	2.0	NA	NA	NA	2/Month	8 HC
039	Ammonia – N (mg/L)	2	0.32	0.43	NA	NA	3 Days/Week	8 HC
120	*E. coli* (N/100mL)	1	126	NA	NA	NA	3 Days/Week 10am-4pm	Grab
140	Enterococci (N/100mL)	2	35	NA	NA	NA	4/Month 10am-4pm	Grab
186	Total Recoverable Silver (ug/L)	2	0.49	0.49	NA	NA	1/Month	8HC
196	Total Recoverable Zinc (ug/L)	2	36	36	NA	NA	1/Month	8HC
202	Total Recoverable Cadmium (ug/L)	2	0.67	0.67	NA	NA	1/Month	8 HC
203	*Interim* Total Recoverable Copper (ug/L)	2	4.6	4.6	NA	NA	1/Month	8HC
203	*Final* Total Recoverable Copper (ug/L)	2	3.6	3.6	NA	NA	1/Month	8HC

Table III. Effluent Limitations Summary for Outfall 101

CEDS Code	PARAMETER	BASIS FOR LIMITS	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
			MONTHLY AVERAGE	WEEKLY AVERAGE	MIN	MAX	FREQ	SAMPLE TYPE
001	Flow (MGD)	NA	NL	NA	NA	NL	1/Day	Estimate
005	TRC (ug/L)	2	8.0	9.8	NA	NA	1/Day	Grab
157	Cl2, Total Contact	3	NA	NA	1.0	NA	1/Day	Grab
213	Cl2, Inst Tech Min	3	NA	NA	0.60	NA	1/Day	Grab

Table IV. Effluent Limitations Summary for Outfall 102

CEDS Code	PARAMETER	BASIS FOR LIMITS	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
			MONTHLY AVERAGE	WEEKLY AVERAGE	MIN	MAX	FREQ	SAMPLE TYPE
012	Total Phosphorus (as P) [mg/L]	5	NL	NA	NA	NA	2/Month	8HC
013	Total Nitrogen (as N) [mg/L]	5	NL	NA	NA	NA	2/Month	8HC
068	TKN [mg/L]	5	NL	NA	NA	NA	2/Month	8HC
389	Total Nitrite (as N) + Total Nitrite (as N) [mg/L]	5	NL	NA	NA	NA	2/Month	8HC
792	Total Nitrogen-Annual Average [mg/L]	5	4.0	NA	NA	NA	1/Year	Calculated
794	Total Phosphorus-Annual Average [mg/L]	5	0.30	NA	NA	NA	1/Year	Calculated
805	Total Nitrogen- Year to Date [mg/L]	5	NL	NA	NA	NA	1/Month	Calculated
806	Total Phosphorus-Year to Date [mg/L]	5	NL	NA	NA	NA	1/Month	Calculated

1. Water Quality Standards
2. Water Quality-based
3. Best Engineering Judgment (BEJ)
4. Model
5. GM07-2008 Amendment 2 *(October 23, 2007)*

a. Water Quality Standards/Water Quality-Based

pH: 9 VAC 25-260-50 of the VA Water Quality Standards outlines numerical criteria for pH in Class III waters between 6.0 s.u. and 9.0 s.u.

E. coli: 9VAC 25-260-170 of the VA WQS establishes bacteria limitations for freshwater receiving streams.

Toxics: Numeric permit limitation calculations utilize conservative low flow ambient conditions to represent circumstances in which the effluent has the greatest potential to impact the receiving stream. Because the receiving stream is intermittent, the stream consists entirely of effluent during low flow conditions. Therefore, one hundred percent mixing and stream characteristics equal to the effluent were inserted in the MSTRANTI

spreadsheet to calculate the maximum wasteload allocations (WLAs) that maintain WQS in the receiving stream.

The DOC submitted data results for all parameters in the VA WQS. Measureable concentrations of the pollutants listed in Table V below were observed in the effluent. All other pollutants analyzed except for cadmium were less than an acceptable QL. The pollutants which have an Aquatic Water Quality Standard were evaluated for reasonable potential using STATS.exe. The results of these analyses are included in **Attachment F** and summarized in the table below. Pollutants that demonstrate reasonable potential to violate WQS are assigned a limitation based on the results of STATS.exe. Total Recoverable copper and zinc data has been reported on the DMRs for the 2005 permit cycle. Total recoverable data was not used in effluent limitation development because the dissolved data reported in the application is more appropriate for comparison with the standard, which is expressed as dissolved.

Monitoring: GM10-2003 recommends sample type and frequency for categories of parameters based on the design flow of the facility. For toxic parameters at this facility, the following sample types are appropriate: 1/8H, 8HC or Grab. The 2005 permit assigned 8HC samples, which will be carried forward in this reissuance.

Ammonia: Per GM00-2011, Ammonia in municipal effluents is evaluated with an assumed datum of 9.00 mg/L. The ammonia standard is expressed in three significant figures, but MSTRANTI only provides two significant figures. Consequently, acute and chronic WLAs for ammonia are calculated in accordance with the formulas below, which are provided in the Virginia WQS, 9 VAC25-260-155 (February 1, 2010) and reflect freshwater criteria with early life stages present (chronic).

$$\text{Acute Criterion Concentration (mg/L)} = \frac{0.411}{(1+10^{7.204-pH})} + \frac{58.4}{(1+10^{pH-7.204})}$$

$$\text{Chronic Criteria Concentration (mg/L)} = \left(\frac{0.0577}{(1+10^{7.688-pH})} + \frac{2.487}{(1+10^{pH-7.688})} \right) * \text{MIN}$$

Where MIN = 2.85 or $1.45 \times 10^{0.028(25-T)}$, whichever is less.
T = maximum temperature in °C
pH= maximum pH in standard units

The ammonia concentration calculated using STATS.exe is less stringent than the limitation applied in the 2005 permit issuance. Consequently, the 2005 limitation is carried forward to prevent backsliding. The 2010 Statistically derived limitations for ammonia are less stringent than the 2005 limitations because of lower reported 90th percentile pH values in 2010. Refer to **Attachment F** for the 2005 and 2010 STATS.exe output for ammonia. The limitation will be expressed in two significant figures because the 2005 evaluation was not performed to the precision of three significant figures.

TRC: Chlorine is a toxic pollutant purposefully introduced into the effluent from the oxidation ditch. Consequently, a reasonable potential analysis is not necessary to establish the need for a limitation. Per GM00-2011, a chlorine limitation was forced using a datum of 20,000 ug/L.

E. coli: Because *E. coli* is a known pollutant associated with domestic wastewater, data is not necessary to establish reasonable potential. Consequently, regardless of the data reported, there is reasonable potential to violate WQS and a limitation is required.

Separate human health (HH) standards apply to waters that are designated as "Public Water Supplies (PWS)" and "all other surface waters." The receiving stream is not designated as a PWS; consequently, the HH (PWS) standards are not applicable to this discharge. Dissolved zinc is the only pollutant with applicable human health standards. As shown in Table V. below, the dissolved zinc HH WLA is several orders or magnitude greater than the observed concentration; therefore, reasonable potential to exceed the HH WLA does not exist. However, STATS.exe indicates that there is reasonable potential to exceed the Aquatic WLAs, so a limitation will be assigned in the permit.

Table V. Summary of Observed Pollutant Reasonable Potential Analyses

Parameter	Effluent Concentration	Aquatic WLA		HH WLA	Reasonable Potential
		Acute	Chronic		
Dissolved Copper (ug/L)	15	3.6	2.7	-	YES
Dissolved Lead (ug/L)	<2, 0.17	20	2.3	-	NO
Dissolved Zinc (ug/L)	35	36	36	26000	YES (aquatic) No (Human Health)
TRC (ug/L)	40	19	11	-	YES
Ammonia	9.3	3.6	0.44	-	YES
Chlorides (ug/L)	53700	860000	230000	-	NO
E. coli (N/100mL)	2	NA	NA	126	YES

TMDL:

Enterococci: This discharge was addressed in the "Totuskey and Richardson Creek TMDL Report for Shellfish Condemnation Areas Listed due to Bacteria Pollution," which was approved by the EPA on February 19, 2010. The facility received an enterococci WLA of 7.33 E+10 N/100 mL based on a permit limit of 35 N/100mL. Consequently, a limitation is required for the permit to be issued in accordance with the TMDL. As noted above, the facility discharges to a freshwater receiving stream, for which the bacteria standard is expressed in terms of *E. coli*. *E. coli* is monitored 3 days/Week to demonstrate adequate disinfection; consequently, it is the permit writer's Best Engineering Judgment to require enterococci monitoring of 4/Month in accordance with a standard based on a 4 sample geometric mean.

b. Best Engineering Judgment

TRC contact: Additional chlorine limitations are required by Sewage Collection and Treatment Regulations, 9 VAC 25-790. TRC sampling frequencies are based on the 0.028 MGD design flow of Outfall 101.

BOD_5, TSS: See below.

c. Model

BOD_5, DO, TSS: These conventional limitations are assigned based on the modeling memo dated 3/18/99. See **Attachment F**. The model assigned a $cBOD_5$ limitation of 15 mg/L. However, the 2005 permit assigned a BOD_5 limitation of 15 mg/L, which is more stringent than an equivalent $cBOD_5$ limitation. To avoid backsliding the BOD_5 limitation of 15 mg/L will be carried forward in this reissuance. Best Engineering Judgment is used to assign a TSS limitation equal to the $cBOD_5$ limitation assigned in this memo. The model also suggests a TKN limitation of 3.0 mg/L. However, because ammonia comprises 40-60% of TKN, a monthly average ammonia limitation of 0.32 mg/L is protective of TKN. Consequently, the ammonia monitoring frequency assigned is the appropriate level for TKN rather than the 1/month monitoring for toxics.

d. Guidance Memo 07-2008 Amendment 2
Annual average TN and TP: nutrient concentrations are assigned based on the design performance of installed nutrient removal technology. The guidance recommends incorporation of these limitations after a CTC is issued. These limitations are assigned to internal Outfall 102, which represent the treated effluent from the SBR facility. See **Attachment G** for the CTC. Because the Nutrient General Permit (GP) for Haynesville addresses effluent at Outfall 001, the monitoring required for the GP cannot be used to calculate calendar year and year-to-date concentrations for Outfall 101 in the Individual Permit. Consequently, monitoring for Total Nitrogen (TKN + Nitrite + Nitrate) and Total Phosphorus is required for this internal outfall.

Monthly average TP: The NEW based TP concentration limitation on Outfall 001 is retained to address the nutrient load from the Oxidation Ditch facility. Once the Oxidation Ditch facility is decommissioned, the following permit action should remove the Total Phosphorus monthly average concentration of 2.0 mg/L from Outfall 001, as it will be superseded by the more stringent annual average concentration limitations that will be applied at Outfall 001.

The Waste Load Allocations assigned in 9VAC25-720-70 are 2,802 pounds per year and 210 pounds per year of Total Nitrogen and Total Phosphorus, respectively. With the existing treatment facilities operating at design flow, the facility would exceed its WLA for TP. DOC intends to decommission the Oxidation Ditch facility, at which point all influent sewage would be treated at the SBR facility. The SBR facility will be designed to achieve 4.0 mg/L and 0.30 mg/L of Total Nitrogen and Total Phosphorus, respectively. If the SBR facility is operated to meet the design concentration limitations, it will meet the annual WLA at design flow. Elimination of the oxidation ditch effluent is critical to meeting annual WLAs. DOC intends to expedite decision making on Old Camp #17 to facilitate compliance.

17. Antibacksliding Statement: The fecal coliform limitation from the 2005 permit was replaced by an *E. coli* limitation. As of June 30, 2008, fecal coliform was replaced in the WQS by *E. coli* and enterococci. The new *E. coli* limitation is protective of the secondary recreation use; consequently, the removal of the fecal coliform limitation is not considered backsliding. This permit reissuance also proposes changing the weekly average loading limitations for BOD_5 and TSS from 15.5 kg/d to 15 kg/d. This change is consistent with GM-06-2016, which states that effluent limitations should be expressed in two significant figures. This change does not represent backsliding, but rather a change in the expression of the limitation.

18. Compliance Schedules: 9 VAC 25-31-250 allows for schedules of compliance, when appropriate, which will lead to compliance with the Clean Water Act, the State Water Control Law and regulations promulgated under them. A schedule of compliance was granted for the copper and zinc limitations. Although limitations for two new bacteria parameters are proposed in this reissuance, a compliance schedule is not provided because the limitations are based on a TMDL and the permittee should already be in compliance.

19. Special Conditions:

a. **B.1: Additional Chlorine Limitations and Monitoring Requirements**
Rationale: Required by Sewage Collection and Treatment Regulations, 9VAC25-790 and Virginia Water Quality Standards 9VAC 25-260-170, Bacteria; other recreational waters. Also, 40 CFR 122.41(e) requires the permittee, at all times, to properly operate and maintain all facilities and systems of treatment in order to comply with the permit. This ensures proper operation of chlorination equipment

to maintain adequate disinfection. The alternate disinfection language for Outfall 001 (Part I.B.2) is custom language to express that the chlorine limitations that apply to Outfall 101 will apply to Outfall 001 in the event chlorine disinfection is employed.

b. **C: Compliance Schedule**
Rationale: 9VAC25-31-250 allows for schedules of compliance, when appropriate, which will lead to compliance with the Clean Water Act, the State Water Control Law and regulations promulgated under them. A compliance schedule is granted in this permit for a new zinc limitation and more stringent copper limitation.

c. **D.1: 95% Capacity Reopener**
Rationale: Required by VPDES Permit Regulation, 9VAC25-31-200 B 4 for all POTW and PVOTW permits.

d. **D.2: Indirect Dischargers**
Rationale: Required by VPDES Permit Regulation, 9VAC25-31-200 B 1 and B 2 for POTWs and PVOTWs that receive waste from someone other than the owner of the treatment works.

e. **D.3: CTC, CTO Requirement**
Rationale: Required by Code of Virginia § 62.1-44.19; Sewage Collection and Treatment Regulations, 9 VAC 25-790. 9 VAC 25-40-70.A authorizes DEQ to include technology-based annual concentrations limits in the permits of facilities that have installed nutrient control equipment, whether by new construction, expansion or upgrade.

f. **D.4: O&M Manual Requirement**
Rationale: Required by Code of Virginia § 62.1-44.19; Sewage Collection and Treatment Regulations, 9 VAC 25-790; VPDES Permit Regulation, 9 VAC 25-31-190.E.

g. **D.5**: **Licensed Operator Requirement**
Rationale: The VPDES Permit Regulation, 9VAC25-31-200 C and the Code of Virginia § 54.1-2300 et seq, Rules and Regulations for Waterworks and Wastewater Works Operators (18VAC160-20-10 et seq.), require licensure of operators.

h. **D.6: Reliability Class**
Rationale: Required by Sewage Collection and Treatment Regulations, 9VAC25-790 for all municipal facilities.

i. **D.7: TMDL Reopener**
Rationale: Section 303(d) of the Clean Water Act requires that total maximum daily loads (TMDLs) be developed for streams listed as impaired. This special condition is to allow the permit to be reopened if necessary to bring it into compliance with any applicable TMDL approved for the receiving stream. The re-opener recognizes that, according to section 402(o)(1) of the Clean Water Act, limits and/or conditions may be either more or less stringent than those contained in this permit. Specifically, they can be relaxed if they are the result of a TMDL, basin plan, or other wasteload allocation prepared under section 303 of the Act.

j. **D.8: Materials Handling/Storage**
Rationale: 9 VAC 25-31-50 A prohibits the discharge of any wastes into State waters unless authorized by permit. Code of Virginia §62.1-44.16 and §62.1-44.17 authorizes the Board to regulate the discharge of industrial waste or other waste.

k. **D.9: Compliance Reporting**
Rationale: Authorized by VPDES Permit Regulation, 9 VAC 25-31-190 J 4 and 220 I. This condition is necessary when pollutants are monitored by the permittee and a maximum level of quantification and/or a specific analytical method is required in order to assess compliance with a permit limit or to compare effluent quality with a numeric criterion. This condition also establishes protocols for calculation of reported values. Metals QLs are the greater of the target values from MSTRANTI or the Agency established minimum QLs from the current VPDES Permit Manual (GM10-2003).

l. **D.10: Sludge Use and Disposal**
Rationale: VPDES Permit Regulation, 9VAC25-31-100 P; 220 B 2; and 420 through 720, and 40 CFR Part 503 require all treatment works treating domestic sewage to submit information on sludge use and disposal practices and to meet specified standards for sludge use and disposal.

m. **D.11: Sludge Reopener**
Rationale: Required by VPDES Permit Regulation, 9VAC25-31-220 C for all permits issued to treatment works treating domestic sewage.

n. **D.12: Nutrient Reopener**
Rationale: 9 VAC 25-40-70 A authorizes DEQ to include technology-based annual concentration limits in the permits of facilities that have installed nutrient control equipment, whether by new construction, expansion or upgrade. 9 VAC 25-31-390 A authorizes DEQ to modify VPDES permits to promulgate amended water quality standards.

o. **D.13: Nutrient Reporting Calculations**
Rationale: § 62.1-44.19:13 of the Code of Virginia defines how annual nutrient loads are to be calculated; this is carried forward in 9 VAC 25-820-70. As annual concentrations (as opposed to annual loads) are limited in the individual permit, this special condition is intended to reconcile the reporting calculations between the permit programs, as the permittee is collecting a single set of samples for the purpose of ascertaining compliance with two permits.

p. **D.14: Suspension of Concentration Limits for E3/E4 Facilities**
Rationale: 9 VAC 25-40-70 B authorizes DEQ to approve an alternate compliance method to the technology-based effluent concentration limitations as required by subsection A of this section. Such alternate compliance method shall be incorporated into the permit of an Exemplary Environmental Enterprise (E3) facility or an Extraordinary Environmental Enterprise (E4) facility to allow the suspension of applicable technology based effluent concentration limitations during the period the E3 or E4 facility has a fully implemented environmental management system that includes operation of installed nutrient removal technologies at the treatment efficiency levels for which they were designed.

q. **D.15: Water Quality Criteria Monitoring**
Rationale: State Water Control Law §62.1-44.21 authorizes the Board to request information needed to determine the discharge's impact on State waters. States

are required to review data on discharges to identify actual or potential toxicity problems, or the attainment of water quality goals, according to 40 CFR Part 131, Water Quality Standards, subpart 131.11. To ensure that water quality criteria are maintained, the permittee is required to analyze the facility's effluent for the substances noted in Attachment A of this VPDES permit. Metals QLs assigned in the Attachment A are based on the greater of Agency established minimum QLs and the most conservative MSTRANTI target values. Because the effluent hardness is expected to change, facility specific target values could not be determined.

r. **D.16: Treatment Works Closure Plan**
Rationale: Code of Virginia § 62.1-44.19 of the State Water Control Law. This condition establishes the requirement to submit a closure plan for the wastewater treatment facility if the treatment facility is being replaced or is expected to close.

s. **Part II, Conditions Applicable to All Permits**
Rationale: VPDES Permit Regulation, 9 VAC 25-31-190 requires all VPDES permits to contain or specifically cite the conditions listed.

20. Changes to Permit:

Cover Page			
Cover Page	Change		Rationale
	From	To	
Format	NA	NA	GM10-2003
City	Haynesville	-	Deleted: County location is sufficient.
Receiving Stream	UT to Garland's Millpond	UT to Marshy Swamp	Flow Frequency Memo (Attachment A)
Special Standards	NEW-15	None	Special Standard repealed.

Part I.A .1. Outfall 001					
Parameter	Effluent Limits		Monitoring Requirement		Reason
	From	To	From	To	
003-BOD5 Monthly Avg/ Weekly Avg Loading	10.1 kg/d 15.5 kg/d	10 kg/d 15 kg/d	3D/Week	3D/Week	GM06-2016
004-TSS Monthly Avg/ Weekly Avg Concentration	15.0 mg/L 23.0 mg/L	15 mg/L 23 mg/L	1/Month	1/Month	GM06-2016
004-TSS Monthly Avg/ Weekly Avg Loading	10.1 kg/d 15.5 kg/d	10 kg/d 15 kg/d	1/Month	1/Month	GM06-2016
006- Fecal coliform Monthly Geo Mean	200 N100mL	-	1/Week	-	Permittee completed bacteria demonstration study during 2005 permit cycle to replace fecal coliform limitation with *E. coli* limitation. Monitoring frequency assigned in accordance with GM10-2003.
120 - *E. coli*	----	126 N/100mL	----	3 D/Wk	

Part I.A .1. Outfall 001					
Parameter	Effluent Limits		Monitoring Requirement		Reason
	From	To	From	To	
012- Total Phosphorus Monthly Avg Loading	1.3 kg/d	----	2/Month	----	Superseded by loading limitations in VAN020044
140 - Enterococci	----	35 N/100mL	----	4/Month	Although, the facility discharges to a freshwater receiving stream, it was assigned a WLA in the "Totuskey and Richardson Creek TMDL" Report. See Part 16 of the FS.
196 - Total Recoverable Zinc Monthly Avg/ Weekly Avg	NL	36 ug/L	1/Month	1/Month	See Part 16. Added to protect against aquatic toxicity. The permittee is granted a 4-year compliance schedule to meet the limitation. Interim monitoring is not required.
203 –*Final* Total Recoverable Copper Monthly Avg/ Weekly Avg	4.6 ug/L	3.6 ug/L	1/Month	1/Month	See Part 16. Limitation reduced to protect against aquatic toxicity.
793, 806 - Total Phosphorus (Monthly, Year to Date) max loadings	NL	----	1/month	----	Haynesville was issued coverage under the Nutrient Trading general permit: VAN020044. According to 9 VAC 25-820-30.A, the general permit shall control in lieu of conflicting or duplicative mass loading effluent limitations, monitoring or reporting requirements for total nitrogen and total phosphorus contained in individual VPDES permits for facilities covered by this general permit
794 - Total Phosphorus loading Calendar Year	NL	----	1/year	----	
795 - Orthophosphate Monthly Avg	NL	----	2/month	----	
013 - Total Nitrogen (as N) Monthly Average	NL	----	2/month	----	
389 - Nitrate plus Nitrite Monthly Average	NL	----	2/month	----	
791, 805 - Total Nitrogen (Monthly and Year to Date) max loadings	NL	----	1/month	----	
792 - Total Nitrogen- Calendar Year loading	NL	----	1/year	----	

Part I.A.3. Outfall 102 was added to establish a compliance point for annual average nutrient concentration limitations for installed technology. No upgrades will occur at the Oxidation Ditch

facility, so the technology based concentration limitations do not apply to the Oxidation Ditch waste stream.

Part I.A .3. Outfall 102 (Outfall added)					
Parameter	Effluent Limits		Monitoring Requirement		Reason
	From	To	From	To	
792 Total Nitrogen- Annual Average	----	4.0 mg/L	----	1/Year	GM07-2008 Amendment 2.
794 Total Phosphorus- Annual Average	----	0.3 mg/L	----	1/Year	GM07-2008 Amendment 2.
805 Total Nitrogen- Year to Date	----	NL	----	1/ Month	GM07-2008 Amendment 2.
806 Total Phosphorus- Year to Date	----	NL	----	1/ Month	GM07-2008 Amendment 2.

From	To	Special Condition	Change	Reason
Part I.A.1	----	Interim Limits for Outfall 001	Removed	Interim Limits expired at the conclusion of the compliance schedule, July 8, 2009.
Part I.A.2	Part I.A.1	Outfall 001	Language updated to reflect appropriate effective and expiration dates of limits page.	
Part I.A.2	Part I.A.1.a (Definitions)	Definitions	Added Definitions for TIRE, 4/Month	In response to new frequencies and sampling types that need to be defined.
Part I.A.2.a	Part I.A.1.a.(1)	Design Flow	Added reference to 95% design capacity.	Clarity.
-	Part I.A.1.a.(2)	Significant Figures	Added footnote.	In accordance with GM06-2016.
Part I.A.2.b	Part I.A.1.b	Prohibition of floating solids or visible foam	No change	NA
Part I.A.2.c	Part I.A.1.a (Definitions)	TIRE	No change	NA
Part I.A.2.d	Part I.A.1.c	85% Removal	“5” subscript added to BOD	Clarity
Part I.A.2.e	Part I.A.1.a.(3)	Compliance Reporting Reference	Revised Reference to Part I.D.9	Formatting Changes
Part I.A.2.f	Part I.A.1.a (Definitions)	2/Month	No change	NA
Part I.A.2.g	NA	Nutrient Reporting Reference	Removed	No longer relevant to this outfall.

From	To	Special Condition	Change	Reason
----	Part I.A.1.a.(4)	Compliance Schedule Reference	Added	Clarity
----	Part I.A.1.d.	Outfall Sampling Location	Added	Clarity
----	Part I.A.1.e.	Nutrient GP	Added	GM07-2008 Amendment 2
Part I.A.3	Part I.A.2	Outfall 101	No change	NA
Part I.A.3.a	Part I.A.2.a (1)	Design Flow	Added reference to 95% design capacity	Clarity
Part I.A.3.b	Part I.A.2.a (2)	Additional TRC requirements	Updated language	Clarity
Part I.A.3.c	Part I.A.2.a (3)	Compliance Reporting	“respectively” deleted	Revised language error.
-	Part I.A.2.b	Sampling Location	Added	Clarity
----	Part I.A.3	Outfall 102	Added	To establish compliance point for annual nutrient concentration limitations based on installed technology.
Part I.B.1	Part I.B.1	Additional Limitations and Monitoring (101)	Revised language	GM 10-2003
Part I.B.2	----	Bacteria Demonstration Study	Removed	Study completed in 2005 permit cycle.
----	Part I.B.2	Alternate Disinfection (001)	Added	To account for use of chlorination at the SBR facility.
Part I.C.	Part I.C	Compliance Schedule	Updated	To reflect the parameters that have a compliance schedule and for language consistent with GM10-2003.
Part I.D.1	Part I.D.1	95% Design Capacity	Updated	GM10-2003
Part I.D.2	Part I.D2	Indirect Dischargers	No change	NA
Part I.D.3	Part I.D.3	CTC, CTO Requirement	Updated and Nutrient language added	GM10-2003 & GM07-2008 Amendment 2.
Part I.D.4	Part I.D.4	O&M Manual	Updated	GM 10-2003
Part I.D.5	Part I.D.5	Licensed Operator Requirement	No change	NA
Part I.D.6	Part I.D.6	Reliability Class	No change	NA
Part I.D.7	Part I.D.11	Sludge Reopener	No change	NA
Part I.D.8	Part I.D.8	Materials Handling/Storage	Updated	GM10-2003
Part I.D.9	Part I.D.9	Compliance Reporting	Updated & deleted TP QL	GM10-2003
Part I.D.10	Part I.D.10	Sludge Use and Disposal	Updated	GM10-2003

From	To	Special Condition	Change	Reason
Part I.D.11	Part I.D.16	Water Quality Criteria Monitoring	Updated	To reflect the sampling required.
Part I.D.12	Part I.D.12	Nutrient Reopener	Updated	In accordance with GM07-2008, Amendment 2
Part I.D.13	Part I.D.13	Nutrient Reporting Calculation	Updated	To reflect concentration calculations rather than loading calculations, as nutrient loading is addressed in VAN020044. Language revised in accordance with GM07-2008 Amendment 2.
Part I.D.14	----	Basis of Design	Removed	Condition requirements completed in 2005 permit cycle.
----	Part I.D.14	Suspension of Conc Limits for E3/E4	Added.	In accordance with GM07-2008 Amendment 2.
Part I.D.15	----	Interim Optimization Plan	Removed	Condition requirements completed in 2005 permit cycle.
----	Part I.D.15	Watershed General Permit Controls	Added	In accordance with GM07-2008 Amendment 2.
Part I.D.16	----	General Permit Clause	Removed	GM07-2008 Amendment 2 superseded GM05-2009.
Part I.D.17	Part I.D.7	TMDL Reopener	No change	NA
----	Part I.D.17	Closure Plan	Added	To reflect WPM decision 3/18/09.
Attachment A	Attachment A	Water Quality Monitoring	Revised	To reflect the current WQS (2/1/2010)

22. Variances/Alternate Limits or Conditions: An application waiver for Total Dissolved Solids (TDS) sampling was signed 4/16/10. See **Attachment H**.

23. Public Notice Information required by 9 VAC 25-31-280 B:
Comment period: Publishing Newspaper: *Westmoreland News*
Publication Dates: 12/29/10 and 1/5/11
Start Date: 12/29/10 End Date: 1/28/11

All pertinent information is on file and may be inspected, and copied by contacting Emilee Carpenter at Virginia DEQ-Piedmont Regional Office, 4949-A Cox Road, Glen Allen VA 23060, (804) 527-5072, e-mail emilee.carpenter@deq.virginia.gov; Fax: 804/527-5106.

DEQ accepts comments and requests for public hearing by e-mail, fax or postal mail. All comments and requests must be in writing and be received by DEQ during the comment period. Submittals must include the names, mailing addresses and telephone numbers of the commenter/requester and of all persons represented by the commenter/requester. A request for public hearing must also include: 1) The reason why a public hearing is requested. 2) A brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requester, including how and to what extent such interest would be directly and adversely affected by the permit. 3) Specific references, where possible, to terms and conditions of the permit with suggested revisions. A public hearing may be held, including another comment period, if public

response is significant, based on individual requests for a public hearing, and there are substantial, disputed issues relevant to the permit. The public may review the draft permit and application at the DEQ office named above by appointment or may request copies of the documents from the contact person listed above.

24. Additional Comments:

Previous Board Action: The facility is currently operating under an Executive Compliance Agreement. Noncompliance with Ammonia and Copper limitations is expected to continue until the plant upgrade is completed. The CTC for the upgrade was issued April 16, 2010. The anticipated completion of the upgrade is Spring 2011. The permittee intends to address the copper limitation through hardness addition at the Water Treatment Plant, which will minimize leaching of metals into the wastewater influent. Reopening of the permit may be necessary once the proposed plan is further developed. It is the permit writer's best professional judgment not to delay reissuance while waiting for finalization of the plan.

Staff Comments:

- The facility is not eligible for reduced monitoring because it is currently in significant noncompliance and an enforcement action is pending.

- A Certificate to Construct was issued to the Department of Corrections April 16, 2010 for the Haynesville WWTP Upgrade. See **Attachment G** for a copy of the CTC and the upgrade design standards.

Other Agency Comments:

- The VDH Office of Drinking Water (ODW) reviewed the reissuance application. The VDH comments dated October 13, 2009, stated that there are no public water supply raw water intakes within 15 miles downstream of the project. VDH expressed no comments in opposition to the permit reissuance application, nor did VDH request review of the draft permit.

- Coordination with VDH-DSS is not necessary because the discharge is not to shellfish waters.

Public Comment: No comments were received.

Final Concurrence Comments:

- Annual permit maintenance fees have been paid. The last payment was deposited August 24, 2010.

- EPA has waived the right to comment on the draft permit.

- The permit expired prior to reissuance because of a TMDL modification.

- This project is not controversial.

- The discharge is in conformance with the existing planning documents for the area.

- The proposed limitations will maintain Water Quality Standards.

- This facility is not a VEEP participant.

- The permittee has been an eDMR participant since April 2008.

25. This facility discharges directly to an unnamed tributary to Marshy Swamp. The stream receiving the effluent is considered a Category 3A water ("No data are available within the data window of the current assessment to determine if any designated use is attained and the water was not previously listed as impaired."). The receiving stream ultimately discharges to Totuskey Creek, for which a TDML was approved by the EPA on February 19, 2010. This discharge was addressed in the "Totuskey and Richardson Creek TMDL Report for Shellfish Condemnation Areas Listed Due to Bacteria Pollution." The facility received a fecal coliform WLA of 2.93 E+10 MPN/year and an enterococci WLA of 7.33 E+10 cfu/year. However, it was later determined that the shellfish use does not exist in Totuskey Creek, so the TMDL was modified on 9/21/10 (approved by EPA) to remove the Fecal coliform WLA. This permit has a limitation of 35 N/100 mL for enterococci that is in compliance with the TMDL.

Attachments:
A. Receiving Stream Info
B. Site Diagram
C. Topographic Map
D. Site Inspection Report
E. Effluent Data
F. Effluent Limitation Development
G: Upgrade Design Standards and CTC
H. Application Waiver

Attachment A

Receiving Stream Info:
Flow Freq Memo 4/27/10

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY
Piedmont Regional Office
4949-A Cox Road Glen Allen, Virginia 23060

SUBJECT: Flow Frequency Determination / 303(d) Status
Haynesville Correctional Center – VA0023469

TO: Emilee Carpenter

FROM: Jennifer Palmore, P.G.

DATE: April 27, 2010

COPIES: File

The Haynesville Correctional Center's sewage treatment plant discharges to an unnamed tributary of Marshy Swamp in Richmond County. The discharge is located at rivermile 3-XAR001.00. Flow frequencies have been requested at this site for use in developing effluent limitations for the VPDES permit.

At the discharge point, the tributary is shown to be intermittent on the USGS 7.5' Haynesville Quadrangle. The flow frequencies for intermittent streams are listed below.

Unnamed tributary at Outfall 001:

1Q30 = 0.0 cfs	High Flow 1Q10 = 0.0 cfs
1Q10 = 0.0 cfs	High Flow 7Q10 = 0.0 cfs
7Q10 = 0.0 cfs	High Flow 30Q10 = 0.0 cfs
30Q10 = 0.0 cfs	HM = 0.0 cfs
30Q5 = 0.0 cfs	

Due to its intermittent nature, the tributary was previously determined to be a Tier 1 water; therefore Tier 1 should be continued in this reissuance.

During the 2008 305(b)/303(d) Water Quality Assessment, none of the stream's designated uses were assessed. It was therefore considered a Category 3A water ("No data are available within the data window of the current assessment to determine if any designated use is attained and the water was not previously listed as impaired.")

The discharge was addressed in the report "Totuskey and Richardson Creek Total Maximum Daily Load Report for Shellfish Condemnation Areas Listed due to Bacteria Pollution", which was approved by the EPA on 2/19/2010. The facility received a fecal coliform wasteload allocation (WLA) of 2.93E+10 MPN/year based on a permit limit of 14 MPN/100 mL and an enterococci WLA of 7.33E+10 cfu/year based on a permit limit of 35 cfu/100 mL.

If you have any questions concerning this analysis, please let me know.

Attachment B

Site Diagram

WASTEWATER TREATMENT PROCESS

ENVIRONMENTAL SERVICES UNIT/HAYNESVILLE CORRECTIONAL CENTER

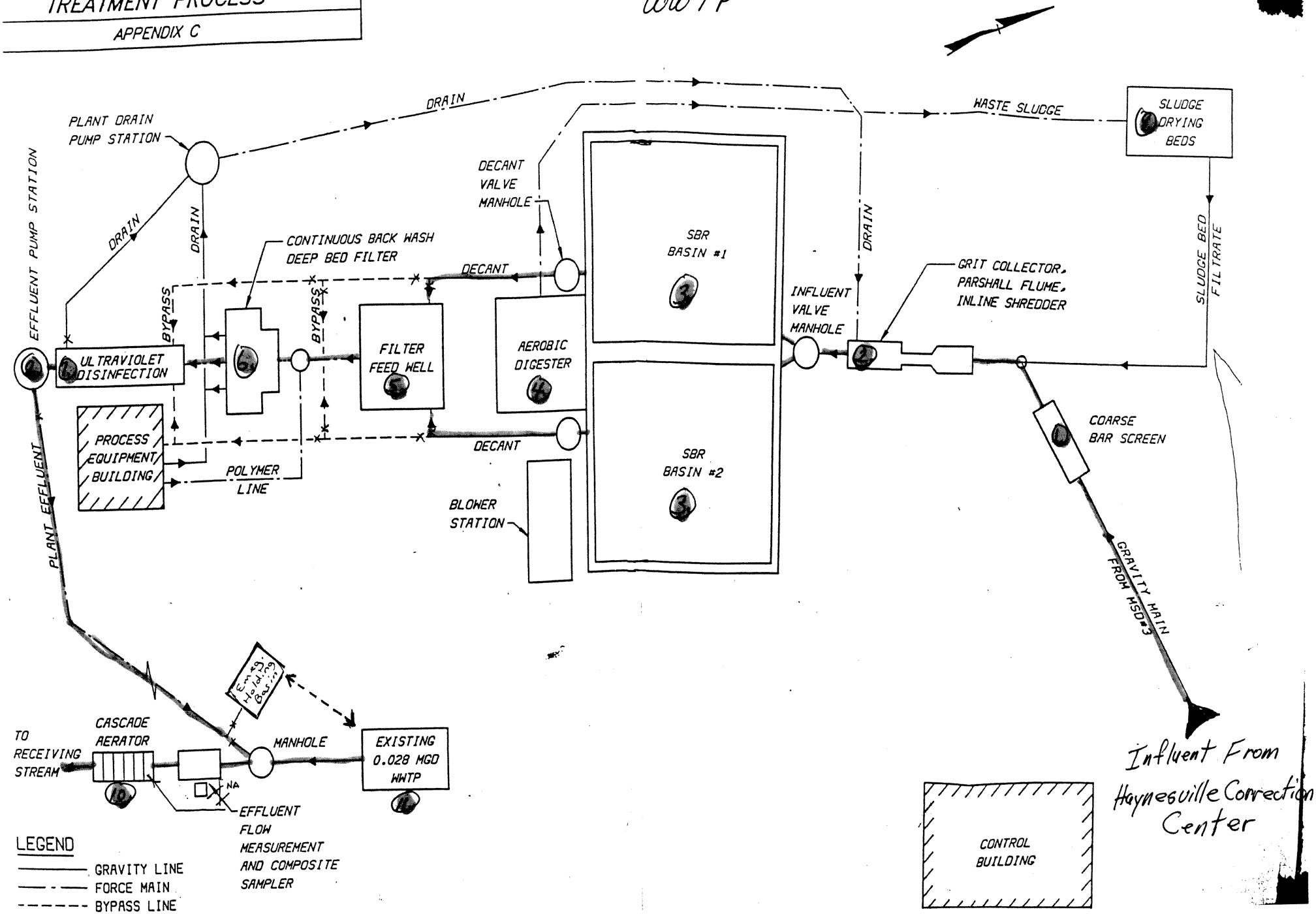
Raw sewage enters the Coarse Bar Screen (1) which removes large particles from the influent. The average daily discharge from the Sequencing Batch Reactor (SBR) Plant is 0.153 mgd. Design flow capacity of the SBR is 0.178 mgd. Next in the treatment process is the Grit Collector, Parshall Flume, Inline Shredder (2). The grit chamber is pumped out by a contractor for disposal every few months and sometimes sooner. After this preliminary process the flow travels into a manhole that splits the flow equally into two SBR Basins (3). Each basin is 38' by 38'. The basins are 16.3' deep from the top of the concrete walk to the bottom of the basin. The liquid depth in each basin varies from 11' to 14.4', resulting in a basin volume of 155,536 gallons each when full. Storm water level is 13.27'. Cycle water level is 12.13'. HRT is 49.77 hours during average flow and 21.33 hours during peak or low storm flow. When filling, the basin goes through three automatic sub-cycles, static (no pump, no blower), anoxic (pump on, no blower) and aerobic (pump and blower on). The basin settles quiescently for an adjustable time. After settling, the basin decants until it reaches its bottom water level. The sludge is wasted for an adjustable period. After sludge is wasted, the idle cycle starts where air and mixing occur periodically for short periods to keep the basin "sweet". Average decant volume per basin is 36,724 gallons. Number of cycles per day per basin is 2.04 average and 4.77 peak or low storm. Total time per cycle is 705 minutes average and 302 minutes peak or low storm. During average flow, fill time is 353 minutes, fill/react time is 353 minutes, react period is 118 minutes, settle period is 45 minutes, average decant rate is 51 gpm/ft., decant time is 60 minutes, decant rate is 612 gpm, and idle period time is 129 minutes. Old sludge is wasted into the Aerobic Digester (4). The capacity of the sludge digestion unit is approximately 34,400 gallons. A retention time of approximately 20 days is required. Average design sludge wasting rate is 4006 gpd. Each cycle is 981 gallons. The WAS pumping rate is 100 gpm. The waste sludge cycle time is 9.8 minutes. Wasted sludge is held under aeration in the digester until it is stable and relatively nuisance free. Supernatant is grained from the digester when aeration is idle. It is returned to the head of the plant for treatment. When the sludge is thickened to desired solids percentage, it is pumped into one of the 20 Drying Beds (9) for dewatering. The SBR decant water flows to the Filter Feed Well (5). This basin is 21' by 21' wide with a maximum water depth of 7'. Pumps carry the SBR basin decant to the Continuous Backwash Deepbed Filter (6). Each filter unit has the capacity to treat 200 gpm (350 gpm peak) of secondary wastewater effluent. After the effluent leaves the filter, it flows through the Ultraviolet System (7). Two complete systems are provided. Each system consist of 6 ultraviolet modules. Each module contains 4 ultraviolet lamps for disinfection. When the effluent passes through the disinfection system, it goes to the AWT Effluent Pump Station (8). Two pumps forward the effluent at a rate of 250 gpm to Post Aeration (10). A cascade is provided at this location to meet aeration needs. This is the discharge point of the existing 28,000 gpd Oxidation Ditch (11). This small plant treats the wastewater from Unit #17. Flows are combined at this point and discharged into the receiving stream. Flow measurement and sampling is taken at this point before entering the discharge stream.

HAYNESVILLE CORRECTIONAL CENTER

SCHEMATIC DIAGRAM OF TREATMENT PROCESS

APPENDIX C

Environmental Services Unit (ESU)
Haynesville Correctional Center (HCC)
WWTP



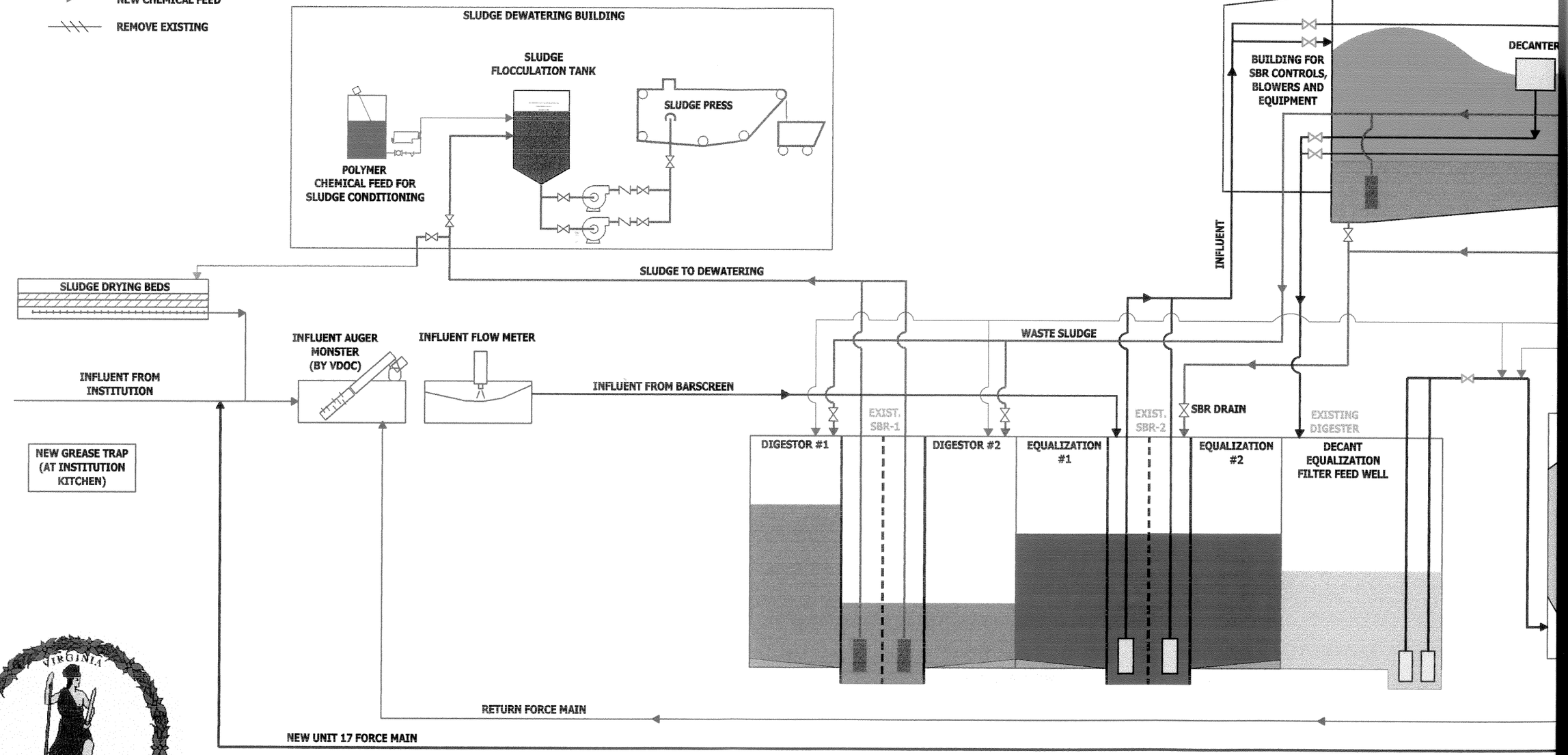
Influent From Haynesville Correction Center

Proposed Upgrade of the 0.150 MGD SBR Facility

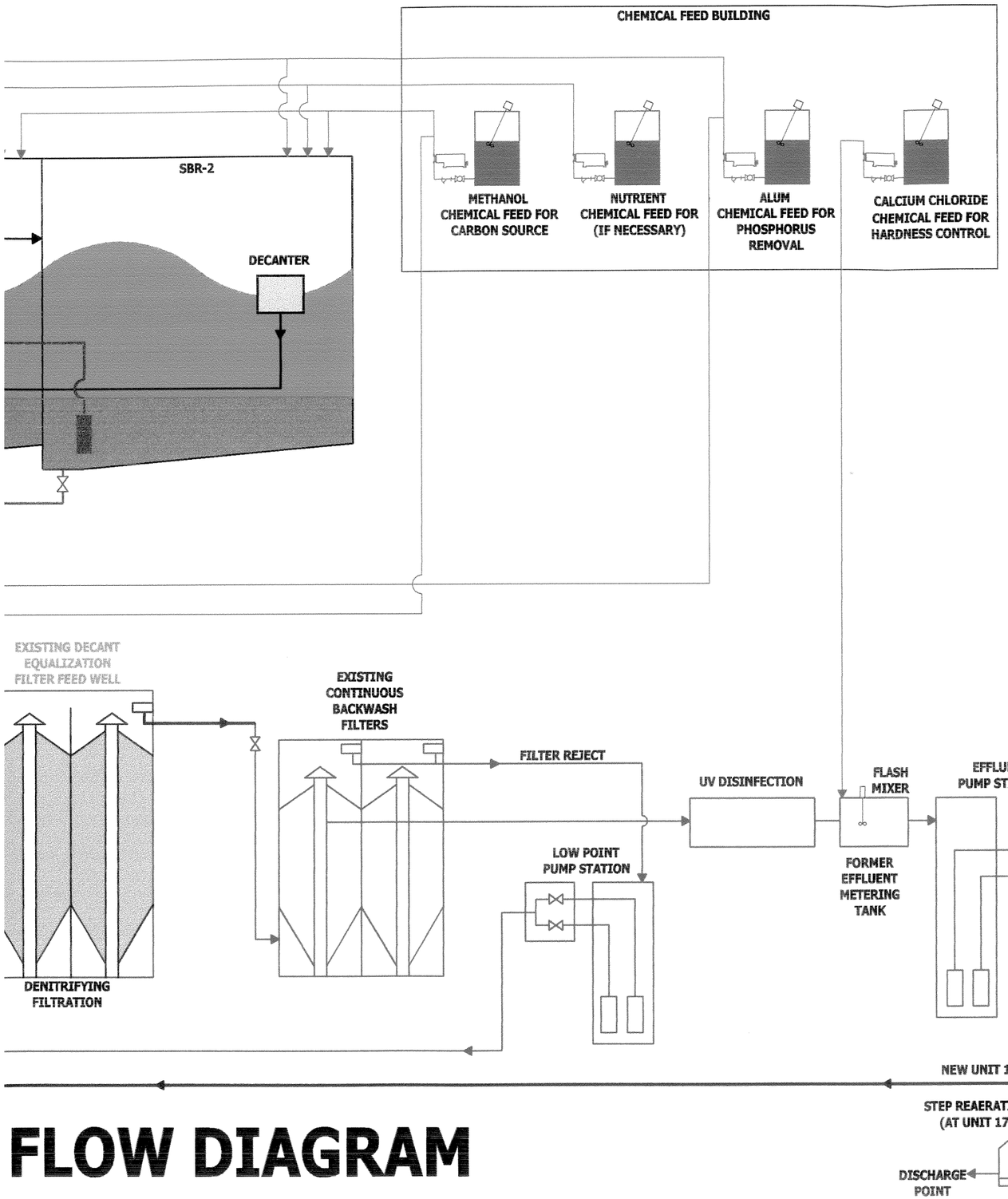
VIRGINIA DEPARTMENT OF CORRECTIONS

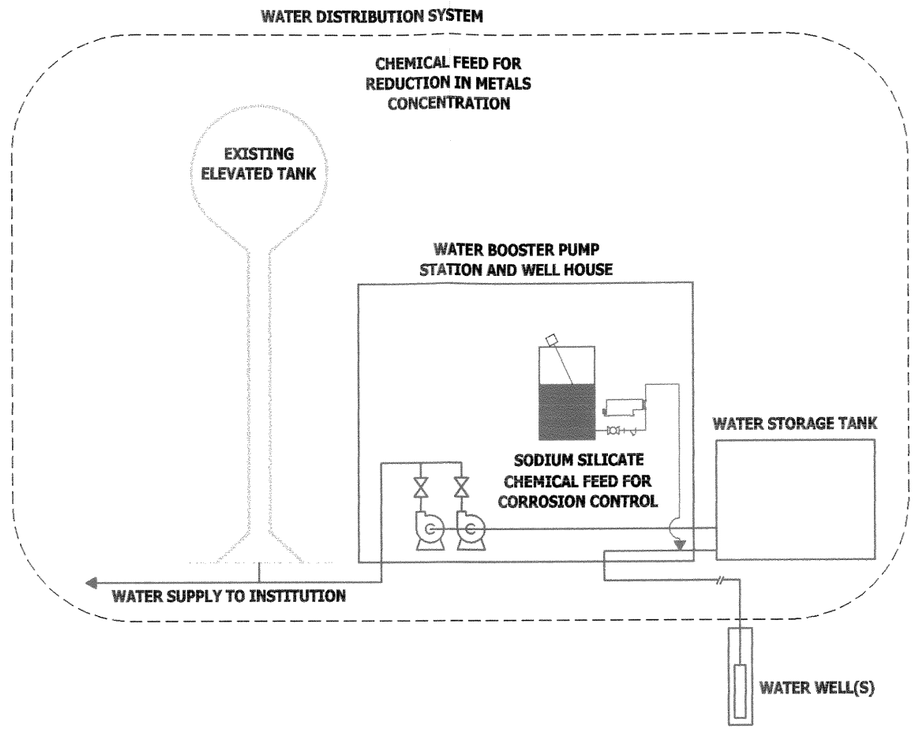
LEGEND

- EXISTING TANK OR FLOW
- NEW PROCESS FLOW
- NEW SLUDGE FLOW
- NEW CHEMICAL FEED
- REMOVE EXISTING



HAYNESVILLE CORRECTIONAL CENTER - OVERALL





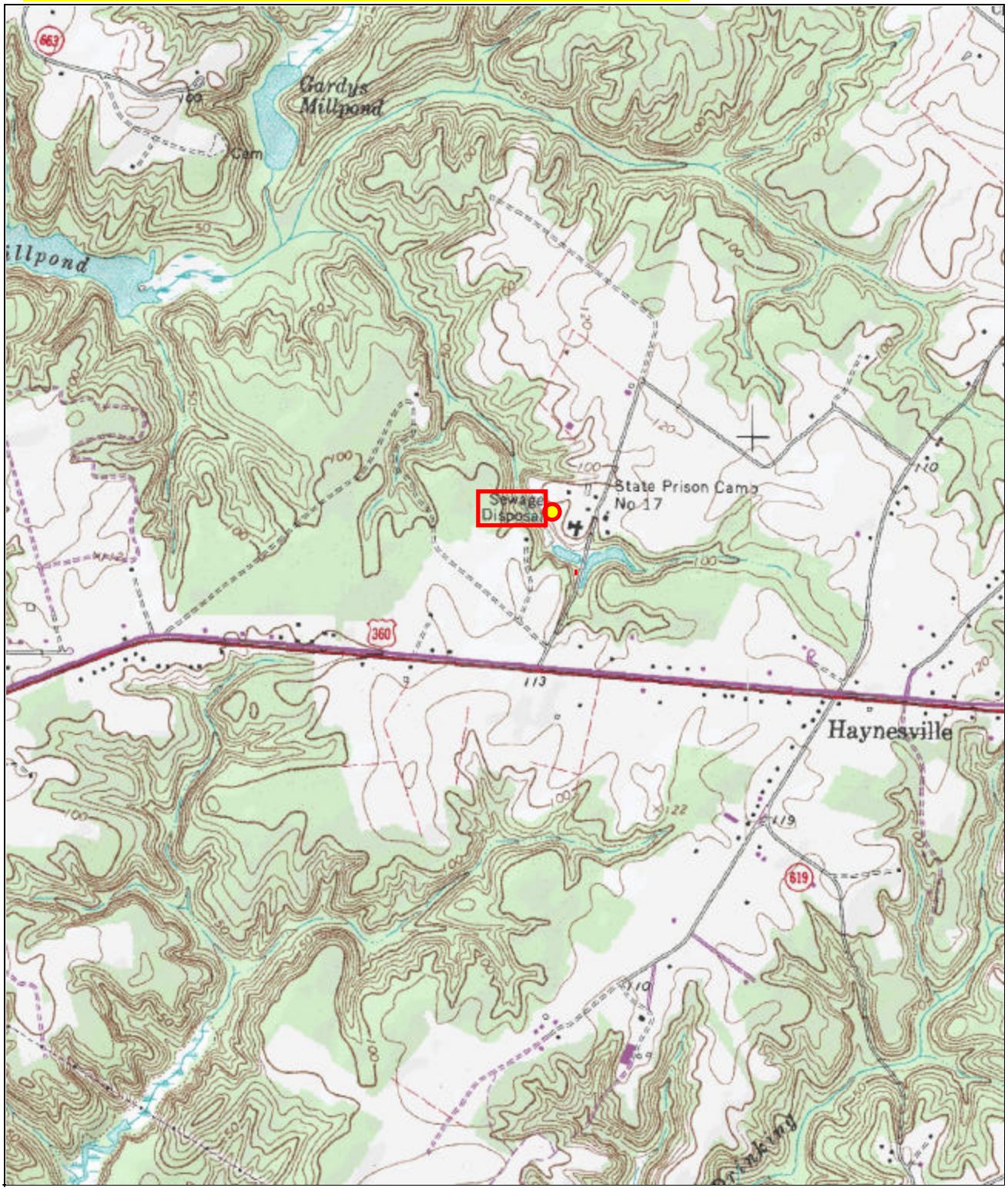
FLOW DIAGRAM

Attachment C

Topographic Map:

Emporia Quadrangle: 37º 57’ 24”, -76º 40’ 35”

DOC-Haynesville Correctional Facility (V A0023469)
Outfall 001: sewage discharge location identified below
N 37 degrees 57' 24", W 76 degrees 40' 35"



N
0 0.5 Mi
0 2000 Ft

Map provided by MyTopo.com

Attachment D

Site Inspection Report

(9/8/2010)

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY
Piedmont Regional Office

4949-A Cox Road **Glen Allen, VA 23060** **804/527-5020**

SUBJECT: DOC Haynesville Correctional Center, VA0023469 Site Visit

TO: File

FROM: Emilee Carpenter – PRO

DATE: September 8, 2010

COPIES: File

I performed an announced site inspection September 1, 2010 at the DOC Haynesville Correctional Center. Wilson Davis, the Treatment Plant Supervisor and Dallas Phillips, the Environmental Services Manager provided a thorough tour of the two treatment facilities and proposed upgrades. The facility was undergoing active construction for the upgrade at the time of my visit. The plant appeared to be performing well during the transition.

There are two treatment facilities that feed into Outfall 001 for this permit. One is an SBR facility, which is currently undergoing upgrade and the other is an oxidation ditch facility that treats wastewater from the Old Camp 17. The latter facility is scheduled to be taken offline either by a facility shutdown or the installation of a pump station to send the influent to the head of the SBR plant. This decision is currently pending as staff awaits the decision to retain or decommission Old Camp 17.

Existing SBR Facility:
The existing facility is an extended aeration Sequencing Batch Reactor built in 1993. The influent passes through manually cleaned bar screens before entering the equalization basin. From equalization, the wastewater is pumped to either of the 2 SBR tanks (Images 1 and 2), where it undergoes phases of aeration and settling. Wastewater is decanted from the SBR tanks and sent to the filter feed wet well (Image 4). From there, wastewater is sent to the sand filter (Image 5) and then through UV disinfection (Image 7). The resulting effluent is pumped to converge with Old Camp 17 effluent and discharge through Outfall 001. At the time of my visit one tank was in the aeration phase while the other was in the settling phase. Thick dark foam was observed in both tanks (Image 1 and 2). Mr. Phillips and Mr. Davis explained that the facility currently receives heavy grease loads, which will be addressed by the upgrade through installation of a new 2,000-3,000 gallon grease trap and a new auger to remove solids at the headworks. I discussed the sludge wasting schedule with Mr. Davis, who said that sludge is wasted from the SBRs on a daily basis in accordance with settleability tests. The sludge is aerobically digested (Image 3) and dried in a series of beds (Image 8) before being

transported to a landfill for disposal. The facility is currently experimenting with *phragmites* to consume the sludge in the drying beds and minimize waste (Image 9). Thus far, the two reed beds have been receiving sludge for 2 years and have not required any sludge removal. All chemicals are stored indoors and protected from weather events (Image 6). The chemicals currently stored include: Alum (Phosphorus removal and sludge thickening) and Granulated Chlorine (tank cleaning). Tank cleaning waste is fed back to the head of the plant for treatment.

Proposed Upgrade to the SBR Facility:

The upgrade of this plant will include the installation of two new SBR tanks which are programmed with varying aerobic and anoxic cycles to achieve nitrification, denitrification and phosphorus removal. Denitrifying sand filters will also be provided for further nutrient removal. A new pre-engineered chemical storage building will be constructed to house SBR blowers, controls, and chemical feed equipment. Alum will be added for phosphorus removal, and methanol and other nutrients as feed stock when needed. Hardness addition is proposed at the WTP to minimize leaching of metals from the distribution lines. The two existing SBRs will be converted into sludge digestion and equalization basins. A new sludge filter press and associated building will be installed to manage the sludge. The existing drying beds will be retained as a backup to the press. The facility is pursuing a modification of the Southampton Sludge Management Plan to add Haynesville sludge to the applied biosolids.

Existing Oxidation Ditch (Old Camp 17):

Unit 17 is located approximately ¼ mile south of the Haynesville facility. Influent passes through a manually cleaned bar screen before entering the oxidation ditch (Image 10) with a clarifier in the center (Image 11). Sludge from the oxidation ditch wastes to the digester (Image 12) and decant from the clarifier goes to the chlorine contact tank for disinfection (Image 13). There are two pretreatment grease traps that are cleaned out by licensed contractors (Image 14). Sludge from the digesters is wasted to two drying beds and ultimately disposed in a landfill (Image 15). Outfall 101 is at the end of the dechlor channel of this facility (Image 16) and residual chlorines are also collected at the end of the contact channel to demonstrate adequate disinfection.

Outfall 001:

The two effluents converge in subsurface piping and daylight at the top of the cascade (Image 17) aeration steps above the Outfall 001 sampling location (Image 18). The effluent and the outfall appeared healthy at the time of my visit. The receiving stream is a heavily vegetated storm water drainage ditch.

Metals:

Mr. Phillips, Mr. Davis and I discussed the permitting process for addressing metals. As noted above hardness addition at the WTP is being pursued as a method to minimize metals in the effluent. In order for DEQ staff to reevaluate the effluent, we have requested 90 consecutive days of hardness sampling with 10 concurrent dissolved metals samples for silver, copper, cadmium and zinc. Once the data has been collected, DOC may request a Permit Modification to re-evaluate the effluent given new information.

Image 1. SBR Tank.

Image 2. SBR Tank.

Image 3. Digester.

Image 4. Filter Feed Wet Well and Pumps.

Image 5. Sand Filter.

Image 6. Chemical Storage: existing (background); proposed (foreground)

Image 7. UV disinfection train.

Image 8. Sludge Drying Bed.

Image 9. Reed Drying Bed.

Image 10. Oxidation Ditch.

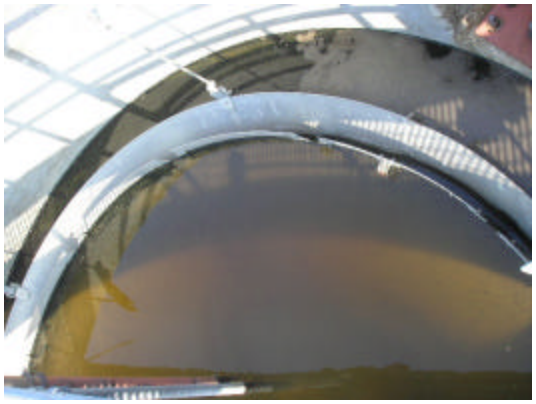


Image 11. Clarifier.

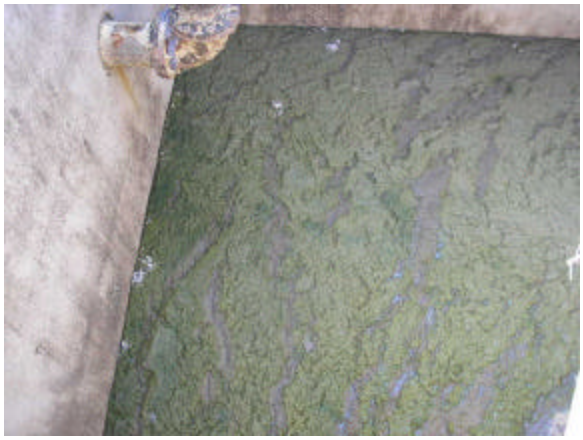


Image 12. Digester (Camp 17)

Image 13: Chlorine Contact Tank.

Image 14. Grease Traps.

Image 15. Drying Bed (Camp 17)

Image 16. Dechlor Channel (OF 101 at end).

Image 17. Cascade Aeration Steps.

Image 18. Outfall 001 sampling location.

Attachment E

Effluent Data:

Application Data
DMR Data

ATTACHMENT A
DEPARTMENT OF ENVIRONMENTAL QUALITY
WATER QUALITY CRITERIA MONITORING

CASRN#	CHEMICAL	EPA ANALYSIS NO.	QUANTIFICATION LEVEL [1]	REPORTING RESULTS 9/09/09	REPORTING RESULTS 12/16/09	SAMPLE TYPE[2]
METALS						
7440-36-0	Antimony, dissolved	(3)	640	<100		G or C
7440-38-2	Arsenic, dissolved	(3)	90	<10		G or C
7440-43-9	Cadmium, dissolved	(3)	0.3	<0.3		G or C
16065-83-1	Chromium III, dissolved [8]	(3)	14	<10		G or C
18540-29-9	Chromium VI, dissolved [8]	(3)	6.4	<5		G or C
7440-50-8	Copper, dissolved	(3)	1.5	15		G or C
7439-92-1	Lead, dissolved	(3)	1.4	<2	0.17	G or C
7439-97-6	Mercury, dissolved	(3)	1.0	<0.2		G or C
7440-02-0	Nickel, dissolved	(3)	3.8	<3		G or C
7782-49-2	Selenium, Dissolved	(3)	3.0	<3		G or C
7782-49-2	Selenium, Total Recoverable	(3)	2.0		<2*	G or C
7440-22-4	Silver, dissolved	(3)	0.20	<0.5	<0.10	G or C
7440-28-0	Thallium, dissolved	(4)	(5)	<2		G or C
7440-66-6	Zinc, dissolved	(3)	14	35		G or C
PESTICIDES/PCB'S						
309-00-2	Aldrin	608	0.05	<6580	<0.05	G or C
57-74-9	Chlordane	608	0.2	<26300	<0.060	G or C
2921-88-2	Chlorpyrifos (synonym = Dursban)	(4)	(5)	<0.11	<1.0	G or C
72-54-8	DDD	608	0.1	<13200	<0.05	G or C
72-55-9	DDE	608	0.1	<5260	<0.05	G or C
50-29-3	DDT	608	0.1	<1320	<0.05	G or C
8065-48-3	Demeton	(4)	(5)	<0.11	<2.5	G or C
333-41-5	Diazinon	(4)	(5)	ND		G or C
60-57-1	Dieldrin	608	0.1	<658	<0.05	G or C
959-98-8	Alpha-Endosulfan	608	0.1	<13200	<0.05	G or C

CASRN#	CHEMICAL	EPA ANALYSIS NO.	QUANTIFICATION LEVEL [1]	REPORTING RESULTS 9/09/09	REPORTING RESULTS 12/16/09	SAMPLE TYPE[2]
33213-65-9	Beta-Endosulfan	608	0.1	<5260	<0.05	G or C
1031-07-8	Endosulfan Sulfate	608	0.1	<1320	<0.05	G or C
72-20-8	Endrin	608	0.1	<13200	<0.05	G or C
7421-93-4	Endrin Aldehyde	(4)	(5)	<26300	<0.05	G or C
86-50-0	Guthion	(4)	(5)	<0.33	<1.0	G or C
76-44-8	Heptachlor	608	0.05	<6580	<0.05	G or C
1024-57-3	Heptachlor Epoxide	(4)	(5)	<26300	<0.05	G or C
319-84-6	Hexachlorocyclohexane Alpha-BHC	608	(5)	<2630	<0.05	G or C
319-85-7	Hexachlorocyclohexane Beta-BHC	608	(5)	<6580,	<0.05	G or C
58-89-9	Hexachlorocyclohexane Gamma-BHC or Lindane	608	(5)	<2630	<0.05	G or C
143-50-0	Kepone	(9)	(5)	<20		G or C
121-75-5	Malathion	(4)	(5)	<0.092	<1.0	G or C
72-43-5	Methoxychlor	(4)	(5)	<263000	<0.05	G or C
2385-85-5	Mirex	(4)	(5)	<0.1		G or C
56-38-2	Parathion	(4)	(5)	<0.080		G or C
1336-36-3	PCB Total	608	7.0	<924000	<0.35	G or C
8001-35-2	Toxaphene	608	5.0	<395000	<2.00	G or C
BASE NEUTRAL EXTRACTABLES						
83-32-9	Acenaphthene	625	10.0	<10		G or C
120-12-7	Anthracene	625	10.0	<10		G or C
92-87-5	Benzidine	(4)	(5)	<50		G or C
56-55-3	Benzo (a) anthracene	625	10.0	<10		G or C
205-99-2	Benzo (b) fluoranthene	625	10.0	<10		G or C
207-08-9	Benzo (k) fluoranthene	625	10.0	<10		G or C
50-32-8	Benzo (a) pyrene	625	10.0	<10		G or C
111-44-4	Bis 2-Chloroethyl Ether	(4)	(5)	<10		G or C
108-60-1	Bis 2-Chloroisopropyl Ether	(4)	(5)	<10		G or C
85-68-7	Butyl benzyl phthalate	625	10.0	<10		G or C
91-58-7	2-Chloronaphthalene	(4)	(5)	<10		G or C

CASRN#	CHEMICAL	EPA ANALYSIS NO.	QUANTIFICATION LEVEL [1]	REPORTING RESULTS 9/09/09	REPORTING RESULTS 12/16/09	SAMPLE TYPE[2]
218-01-9	Chrysene	625	10.0	<10		G or C
53-70-3	Dibenz(a,h)anthracene	625	20.0	<10		G or C
84-74-2	Dibutyl phthalate (synonym = Di-n-Butyl Phthalate)	625	10.0	<10		G or C
95-50-1	1,2-Dichlorobenzene	624	10.0	<10		G or C
541-73-1	1,3-Dichlorobenzene	624	10.0	<10		G or C
106-46-7	1,4-Dichlorobenzene	624	10.0	<10		G or C
91-94-1	3,3-Dichlorobenzidine	(4)	(5)	<10		G or C
84-66-2	Diethyl phthalate	625	10.0	<10		G or C
117-81-7	Bis-2-ethylhexyl phthalate	625	10.0	<10		G or C
131-11-3	Dimethyl phthalate	(4)	(5)	<10		G or C
121-14-2	2,4-Dinitrotoluene	625	10.0	<10		G or C
122-66-7	1,2-Diphenylhydrazine	(4)	(5)	<10		G or C
206-44-0	Fluoranthene	625	10.0	<10		G or C
86-73-7	Fluorene	625	10.0	<10		G or C
118-74-1	Hexachlorobenzene	(4)	(5)	<10		G or C
87-68-3	Hexachlorobutadiene	(4)	(5)	<10		G or C
77-47-4	Hexachlorocyclopentadiene	(4)	(5)	<10		G or C
67-72-1	Hexachloroethane	(4)	(5)	<10		G or C
193-39-5	Indeno(1,2,3-cd)pyrene	625	20.0	<10		G or C
78-59-1	Isophorone	625	10.0	<10		G or C
98-95-3	Nitrobenzene	625	10.0	<10		G or C
62-75-9	N-Nitrosodimethylamine	(4)	(5)	<10		G or C
621-64-7	N-Nitrosodi-n-propylamine	(4)	(5)	<10		G or C
86-30-6	N-Nitrosodiphenylamine	(4)	(5)	<10		G or C
129-00-0	Pyrene	625	10.0	<10		G or C
120-82-1	1,2,4-Trichlorobenzene	625	10.0	<10		G or C
VOLATILES						
107-02-8	Acrolein	(4)	(5)	<10		G
107-13-1	Acrylonitrile	(4)	(5)	<10		G

CASRN#	CHEMICAL	EPA ANALYSIS NO.	QUANTIFICATION LEVEL [1]	REPORTING RESULTS 9/09/09	REPORTING RESULTS 12/16/09	SAMPLE TYPE[2]
71-43-2	Benzene	624	10.0	<10		G
75-25-2	Bromoform	624	10.0	<10		G
56-23-5	Carbon Tetrachloride	624	10.0	<10		G
108-90-7	Chlorobenzene (synonym = monochlorobenzene)	624	50.0	<10		G
124-48-1	Chlorodibromomethane	624	10.0	<10		G
67-66-3	Chloroform	624	10.0	<10		G
75-09-2	Dichloromethane (synonym = methylene chloride)	624	20.0	<10		G
75-27-4	Dichlorobromomethane	624	10.0	<10		G
107-06-2	1,2-Dichloroethane	624	10.0	<10		G
75-35-4	1,1-Dichloroethylene	624	10.0	<10		G
156-60-5	1,2-trans-dichloroethylene	(4)	(5)	<10		G
78-87-5	1,2-Dichloropropane	(4)	(5)	<10		G
542-75-6	1,3-Dichloropropene	(4)	(5)	<10		G
100-41-4	Ethylbenzene	624	10.0	<10		G
74-83-9	Methyl Bromide	(4)	(5)	<10		G
79-34-5	1,1,2,2-Tetrachloroethane	(4)	(5)	<10		G
127-18-4	Tetrachloroethylene	624	10.0	<10		G
10-88-3	Toluene	624	10.0	<10		G
79-00-5	1,1,2-Trichloroethane	(4)	(5)	<10		G
79-01-6	Trichloroethylene	624	10.0	<10		G
75-01-4	Vinyl Chloride	624	10.0	<10		G
ACID EXTRACTABLES [6]						
95-57-8	2-Chlorophenol	625	10.0	<10		G or C
120-83-2	2,4 Dichlorophenol	625	10.0	<10		G or C
105-67-9	2,4 Dimethylphenol	625	10.0	<10		G or C
51-28-5	2,4-Dinitrophenol	(4)	(5)	<50		G or C
534-52-1	2-Methyl-4,6-Dinitrophenol	(4)	(5)	<50		G or C
25154-52-3	Nonylphenol	(5)	(5)	<10*		G or C
87-86-5	Pentachlorophenol	625	50.0	<20		G or C

CASRN#	CHEMICAL	EPA ANALYSIS NO.	QUANTIFICATION LEVEL [1]	REPORTING RESULTS 9/09/09	REPORTING RESULTS 12/16/09	SAMPLE TYPE[2]
108-95-2	Phenol	625	10.0	<10		G or C
88-06-2	2,4,6-Trichlorophenol	625	10.0	<10		G or C
MISCELLANEOUS						
776-41-7	Ammonia as NH3-N	350.1	200	<100		C
16887-00-6	Chlorides	(4)	(5)	53700		C
7782-50-5	Chlorine, Total Residual	(4)	100	40		G
57-12-5	Cyanide, Free	(4)	10.0	<10		G
N/A	*E. coli* / *Enterococcus* (N/CML)	(4)	(5)	2		G
7783-06-4	Hydrogen Sulfide	(5)	(5)	<100		G
60-10-5	Tributyltin [7]	NBSR 85-3295	(5)	<0.03		G or C
	Hardness (mg/L as $CaCO_3$)	(4)	(5)	16.9		G or C (10)

* Analysis issued August 11, 2010 based on a sample collected July 22, 2010.

Facility Name: Haynesville Correctional Center
Permit No:VA0023469
Outfall 001

DMR Data

	FLOW		pH		Ammonia		TR Silver		TR Zinc		TR Cadmium		TR Copper	
Due Date*	Quant Avg	Quanti Max	Conc Min	Conc Max	Conc Avg	Conc Max	Conc Avg	Conc Max	Conc Avg	Conc Max	Conc Avg	Conc Max	Conc Avg	Conc Max
10-Apr-07	0.074	0.107	7.6	8.3	<QL	<QL			53	53			11	11
10-May-07	0.073	0.111	7.4	8.1	<QL	<QL			69	69			12	12
10-Jun-07	0.073	0.092	7.5	8.2	<QL	<QL			45.9	45.9			13.4	13.4
10-Jul-07	0.075	0.098	7.7	8.2	<QL	<QL			58.4	58.4			16.6	16.6
10-Aug-07	0.076	0.1	7.8	8.3	<QL	<QL			62.3	62.3			10.4	10.4
10-Sep-07	0.08	0.108	7.8	8.6	<QL	<QL			49.8	49.8			15.7	15.7
10-Oct-07	0.076	0.11	7.3	8.5	<QL	<QL			44.8	44.8			10.4	10.4
10-Nov-07	0.0808	0.11	7.9	8.4	<QL	<QL			29.5	29.5			11.7	11.7
10-Dec-07	0.0862	0.115	7.9	8.4	0.08	0.33			33.6	33.6			11.1	11.1
10-Jan-08	0.084	0.116	7.5	8.3	0.04	0.18			31.2	31.2			17.8	17.8
10-Feb-08	0.083	0.116	7.1	8.3	<QL	<QL			32.4	32.4			18.4	18.4
10-Mar-08	0.084	0.113	7.2	8.3	<QL	<QL			21.9	21.9			18.7	18.7
10-Apr-08	0.084	0.119	7.5	8.4	0.2	0.09			26.9	26.9			20.3	20.3
10-May-08	0.09	0.12	7.8	8.3	<QL	<QL			33.1	33.1			17.7	17.7
10-Jun-08	0.089	0.124	7.9	8.4	0.05	0.18			42.2	42.2			18.5	18.5
10-Jul-08	0.092	0.144	7.9	8.4	<QL	<QL			40.2	40.2			19.8	19.8
10-Aug-08	0.092	0.131	6.8	8.4	0.06	0.24			42.3	42.3			21.2	21.2
10-Sep-08	0.088	0.117	7.4	8.4	0.1	0.4			37.3	37.3			19.2	19.2
10-Oct-08	0.093	0.128	8	8.5	0.02	0.11			34.8	34.8			19.1	19.1
10-Nov-08	0.089	0.112	8	8.5	<QL	<QL			33.8	33.8			16.5	16.5
10-Dec-08	0.088	0.114	6.5	8.4	<QL	<QL			38.2	38.2			15.7	15.7
10-Jan-09	0.089	0.118	7.9	8.3	0.02	<QL			32.4	32.4			16.1	16.1
10-Feb-09	0.086	0.112	7.8	8.3	<QL	<QL			31.8	31.8			13.9	13.9
10-Mar-09	0.088	0.109	7.8	8.2	0.1	0.2			36.5	36.5			16.1	16.1
10-Apr-09	0.089	0.114	7.7	8.3	0.1	0.3			34.4	34.4			16.2	16.2
10-May-09	0.089	0.115	7.7	8.4	0.1	0.1			37.6	37.6			20.4	20.4
10-Jun-09	0.087	0.127	7.7	8.4	0.02	0.1			29.1	29.1			17.3	17.3
10-Jul-09	0.093	0.123	7.7	8.4	<QL	<QL			50.6	50.6			40.6	40.6
10-Aug-09	0.09	0.126	8	8.4	<QL	<QL			35.1	35.1			18.5	18.5
10-Sep-09	0.101	0.132	7.9	8.4	<QL	<QL	NR	NR	46.6	46.6	NR	NR	21.4	21.4
10-Oct-09	0.096	0.144	7.8	8.4	<QL	<QL	<QL	<QL	51	51	<QL	<QL	15.3	15.3
10-Nov-09	0.095	0.13	7.8	8.3	<QL	<QL	0	0	38.4	38.4	<QL	<QL	19.6	19.6
10-Dec-09	0.092	0.131	7.6	8.2	0.5	1.6	<QL	<QL	36.7	36.7	<QL	<QL	15.4	15.4
10-Jan-10	0.086	0.117	7.5	8.3	<QL	<QL	<QL	<QL	26.5	26.5	<QL	<QL	17.3	17.3
10-Feb-10	0.087	0.133	7.5	8.2	0.1	0.4	<QL	<QL	31.4	31.4	<QL	<QL	15	15
10-Mar-10	0.09	0.139	7.7	8.4	<QL	<QL	<QL	<QL	37.6	37.6	<QL	<QL	16	16
10-Apr-10	0.09	0.129	7.7	8.4	<QL	<QL	<QL	<QL	34.7	34.7	<QL	<QL	<QL	<QL
10-May-10	0.088	0.109	7.7	8.4	<QL	<QL	<QL	<QL	58.7	58.7	<QL	<QL	16.6	16.6
Average	0.08643243	0.11902703	7.62972973	8.34864865	0.10642857	0.32538462	0	0	39.2162162	39.2162162	<QL	<QL	17.0638889	17.0638889
90%tile	0.093	0.1324	7.9	8.44	0.17	0.4	0	0	51.8	51.8	<QL	<QL	20.35	20.35
10%tile	0.0756	0.1076	7.26	8.2	0.02	0.1	0	0	29.34	29.34	<QL	<QL	11.4	11.4
Max	0.101	0.144	8	8.6	0.5	1.6	0	0	69	69	<QL	<QL	40.6	40.6
Proposed 2010 Limits	NA	NL	6	9	0.32	0.43	0.49	0.49	36	36	0.67	0.67	3.6	3.6

Cells highlighted in red reflect observed concentrations above the proposed 2010 limits for the existing facility.
Cells highlighted in yellow represent data used as inputs in MSTRANTI.

Attachment F

Effluent Limitation Development:

Modeling Memo
MSTRANTI Data Source Report
MSTRANTI
STATS.exe (2010 and 2005)

****

REGIONAL MODELING SYSTEM VERSION 3.2

****

MODEL SIMULATION FOR THE Haynesville DISCHARGE

TO UTRIB Garland's Millpond

COMMENT: considers capacities of 0.028 and 0.15 MGD WWTPs

THE SIMULATION STARTS AT THE Haynesville DISCHARGE

********** PROPOSED PERMIT LIMITS **********

FLOW = .178 MGD cBOD5 = 15 Mg/L TKN = 3 Mg/L D.O. = 5.5 Mg/L

**** THE MAXIMUM CHLORINE ALLOWABLE IN THE DISCHARGE IS 0.011 Mg/L ****

THE SECTION BEING MODELED IS BROKEN INTO 2 SEGMENTS
RESULTS WILL BE GIVEN AT 0.1 MILE INTERVALS

********** BACKGROUND CONDITIONS **********

THE 7Q10 STREAM FLOW AT THE DISCHARGE IS 0.00000 MGD
THE DISSOLVED OXYGEN OF THE STREAM IS 7.489 Mg/L
THE BACKGROUND cBOD5 OF THE STREAM IS 5 Mg/L
THE BACKGROUND nBOD OF THE STREAM IS 0 Mg/L

********** MODEL PARAMETERS **********

SEG.	LEN. MI	VEL. F/S	K2 1/D	K1 1/D	KN 1/D	BENTHIC Mg/L	ELEV. Ft	TEMP. °C	DO-SAT Mg/L
1	0.40	0.482	20.000	1.400	0.350	0.000	50.00	25.00	8.321
2	0.80	0.354	18.750	1.400	0.350	0.000	27.50	25.00	8.327

(The K Rates shown are at 20°C ... the model corrects them for temperature.)

********** RESPONSE FOR SEGMENT 1 **********

TOTAL STREAMFLOW = 0.1780 MGD
(Including Discharge)

DISTANCE FROM HEAD OF SEGMENT (MI.)	TOTAL DISTANCE FROM MODEL BEGINNING (MI.)	DISSOLVED OXYGEN (Mg/L)	cBOD$_u$ (Mg/L)	nBOD$_u$ (Mg/L)
0.000	0.000	5.500	37.500	0.000
0.100	0.100	5.480	36.671	0.000
0.200	0.200	5.482	35.860	0.000
0.300	0.300	5.498	35.068	0.000
0.400	0.400	5.526	34.292	0.000

FOR THE DISCHARGE AT THE END OF SEGMENT 1
DISCHARGER = unnamed
FLOW = .00168 MGD cBOD5 = 2 Mg/L TKN = 1 Mg/L D.O. = 8 Mg/L

FLOW FROM INCREMENTAL DRAINAGE AREA = 0.0000 MGD

********** RESPONSE FOR SEGMENT 2 **********

TOTAL STREAMFLOW = 0.1797 MGD)
(Including Discharge, Tributaries and Incremental D.A. Flow)

DISTANCE FROM HEAD OF SEGMENT (MI.)	TOTAL DISTANCE FROM MODEL BEGINNING (MI.)	DISSOLVED OXYGEN (Mg/L)	cBOD$_u$ (Mg/L)	nBOD$_u$ (Mg/L)
0.000	0.400	5.549	34.019	0.000
0.100	0.500	5.544	32.999	0.000
0.200	0.600	5.567	32.011	0.000
0.300	0.700	5.607	31.052	0.000
0.400	0.800	5.659	30.121	0.000
0.500	0.900	5.719	29.219	0.000
0.600	1.000	5.783	28.343	0.000
0.700	1.100	5.849	27.494	0.000
0.800	1.200	5.917	26.670	0.000

****

REGIONAL MODELING SYSTEM Ver 3.2 (OWRM - 9/90)
01-20-1994 14:03:27

DATA FILE = 194.MOD

To: Diane O. Cook@RCHMD@DEQ
Cc:
Bcc:
From: Denise M. Mosca@KLMCK@DEQ
Subject: re: stream model
Date: Thursday, March 18, 1999 16:41:12 EST
Attach:
Certify: N
Forwarded by:

OK, here's the regional model--Back in '94 I also ran at flow 0.178 MGD as well.

So, we're ok with increased flow.

denise

****

REGIONAL MODELING SYSTEM VERSION 3.2

****

MODEL SIMULATION FOR THE Haynesville Correctional Center DISCHARGE

TO UTRIB Garland's Mill pond

COMMENT: 7Q10 of zero

THE SIMULATION STARTS AT THE Haynesville Correctional Center DISCHARGE

********** PROPOSED PERMIT LIMITS **********

FLOW = .15 MGD CBOD5 = 15 Mg/L TKN = 3 Mg/L D.O. = 5.5 Mg/L

**** THE MAXIMUM CHLORINE ALLOWABLE IN THE DISCHARGE IS 0.011 Mg/L ****

THE SECTION BEING MODELED IS BROKEN INTO 2 SEGMENTS
RESULTS WILL BE GIVEN AT 0.1 MILE INTERVALS

********** BACKGROUND CONDITIONS **********

THE 7Q10 STREAM FLOW AT THE DISCHARGE IS 0.00000 MGD
THE DISSOLVED OXYGEN OF THE STREAM IS 7.489 Mg/L
THE BACKGROUND cBOD5 OF THE STREAM IS 5 Mg/L
THE BACKGROUND nBOD OF THE STREAM IS 0 Mg/L

********** MODEL PARAMETERS **********

SEG.	LEN. MI	VEL. F/S	K2 1/D	K1 1/D	KN 1/D	BENTHIC Mg/L	ELEV. Ft	TEMP. °C	DO-SAT Mg/L
1	0.40	0.482	20.000	1.400	0.350	0.762	50.00	25.00	8.321
2	0.80	0.354	18.750	1.400	0.350	0.000	27.50	25.00	8.327

(The K Rates shown are at 20°C ... the model corrects them for temperature.)

********** RESPONSE FOR SEGMENT 1 **********

TOTAL STREAMFLOW = 0.1500 MGD
(Including Discharge)

DISTANCE FROM HEAD OF SEGMENT (MI.)	TOTAL DISTANCE FROM MODEL BEGINNING (MI.)	DISSOLVED OXYGEN (Mg/L)	cBOD5 (Mg/L)	nBOD5 (Mg/L)
0.000	0.000	5.500	37.500	0.000
0.100	0.100	5.468	36.671	0.000
0.200	0.200	5.460	35.860	0.000
0.300	0.300	5.470	35.068	0.000
0.400	0.400	5.492	34.292	0.000

FOR THE DISCHARGE AT THE END OF SEGMENT 1
DISCHARGER = unnamed
FLOW = .00168 MGD cBOD5 = 2 Mg/L TKN = 1 Mg/L D.O. = 8 Mg/L

FLOW FROM INCREMENTAL DRAINAGE AREA = 0.0014 MGD

********** RESPONSE FOR SEGMENT 2 **********

TOTAL STREAMFLOW = 0.1531 MGD
(Including Discharge, Tributaries and Incremental D.A. Flow)

DISTANCE FROM HEAD OF SEGMENT (MI.)	TOTAL DISTANCE FROM MODEL BEGINNING (MI.)	DISSOLVED OXYGEN (Mg/L)	cBODu (Mg/L)	nBODu (Mg/L)
0.000	0.400	5.538	33.699	0.000
0.100	0.500	5.545	32.689	0.000
0.200	0.600	5.575	31.710	0.000
0.300	0.700	5.620	30.760	0.000
0.400	0.800	5.676	29.838	0.000
0.500	0.900	5.737	28.944	0.000
0.600	1.000	5.802	28.077	0.000
0.700	1.100	5.870	27.236	0.000
0.800	1.200	5.937	26.420	0.000

****

REGIONAL MODELING SYSTEM Ver 3.2 (OWRM - 9/90)
06-08-1994 11:24:39

DATA FILE = ZERO.MOD


Rich Neck
Haynesville
State Prison Camp
No. 17
Garlands Millpond
Millpond
Indian Field
Totuskey

MSTRANTI DATA SOURCE REPORT

(Haynesville Correctional Center)

Stream Information	
Mean Hardness	Because the stream is intermittent, it consists entirely of effluent during design conditions. Consequently, effluent data is used to characterize the stream.
90% Temperature (annual)	
90% Temperature (wet season)	
90% Maximum pH	
10% Maximum pH	
Tier Designation	Flow Frequency Memo (4/27/10)
Stream Flows & Mixing Information	
All Data	Flow Frequency Memo (4/27/10) provided Stream Flows of zero; 100% mixing is assumed because the stream consists entirely of effluent during the ambient flow scenarios evaluated.
Effluent Information	
Mean Hardness	App Data
90% Temperature (annual)	Max temperature reported on the Application serves as a surrogate for P90. Because individual results were not reported, the maximum is the best estimate available.
90% Temperature (wet season)	NA
90% Maximum pH	DMR data
10% Maximum pH	DMR data
Discharge Flow	Design Flow

Data Location:

Flow Frequency Analysis – Attachment A
App Data – Attachment E
DMR Data – Attachment E

FRESHWATER
WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: Haynesville Correctional Facility Permit No.: VA0023469

Receiving Stream: Marshy Swamp, UT Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information		
Mean Hardness (as CaCO3) =	16.9	mg/L
90% Temperature (Annual) =	30.2	deg C
90% Temperature (Wet season) =	NA	deg C
90% Maximum pH =	8.44	SU
10% Maximum pH =	8.2	SU
Tier Designation (1 or 2) =	1	
Public Water Supply (PWS) Y/N? =	n	
Trout Present Y/N? =	n	
Early Life Stages Present Y/N? =	y	

Stream Flows		
1Q10 (Annual) =	0	MGD
7Q10 (Annual) =	0	MGD
30Q10 (Annual) =	0	MGD
1Q10 (Wet season) =	0	MGD
30Q10 (Wet season)	0	MGD
30Q5 =	0	MGD
Harmonic Mean =	0	MGD

Mixing Information		
Annual - 1Q10 Mix =	100	%
- 7Q10 Mix =	100	%
- 30Q10 Mix =	100	%
Wet Season - 1Q10 Mix =	100	%
- 30Q10 Mix =	100	%

Effluent Information		
Mean Hardness (as CaCO3) =	16.9	mg/L
90% Temp (Annual) =	30.2	deg C
90% Temp (Wet season) =		deg C
90% Maximum pH =	8.44	SU
10% Maximum pH =	8.2	SU
Discharge Flow =	0.178	MGD

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Acenapthene	0	--	--	na	9.9E+02	--	--	na	9.9E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**9.9E+02**
Acrolein	0	--	--	na	9.3E+00	--	--	na	9.3E+00	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**9.3E+00**
Acrylonitrile C	0	--	--	na	2.5E+00	--	--	na	2.5E+00	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.5E+00**
Aldrin C	0	3.0E+00	--	na	5.0E-04	3.0E+00	--	na	5.0E-04	--	--	--	--	--	--	--	--	**3.0E+00**	**--**	**na**	**5.0E-04**
Ammonia-N (mg/l) (Yearly)	0	3.59E+00	4.39E-01	na	--	3.6E+00	4.4E-01	na	--	--	--	--	--	--	--	--	--	**3.6E+00**	**4.4E-01**	**na**	**--**
Ammonia-N (mg/l) (High Flow)	0	3.59E+00	#VALUE!	na	--	3.6E+00	#######	na	--	--	--	--	--	--	--	--	--	**3.6E+00**	**#VALUE!**	**na**	**--**
Anthracene	0	--	--	na	4.0E+04	--	--	na	4.0E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.0E+04**
Antimony	0	--	--	na	6.4E+02	--	--	na	6.4E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**6.4E+02**
Arsenic	o	3.4E+02	1.5E+02	na	--	3.4E+02	1.5E+02	na	--	--	--	--	--	--	--	--	--	**3.4E+02**	**1.5E+02**	**na**	**--**
Barium	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Benzene C	0	--	--	na	5.1E+02	--	--	na	5.1E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**5.1E+02**
Benzidine C	0	--	--	na	2.0E-03	--	--	na	2.0E-03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.0E-03**
Benzo (a) anthracene C	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.8E-01**
Benzo (b) fluoranthene C	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.8E-01**
Benzo (k) fluoranthene C	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.8E-01**
Benzo (a) pyrene C	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.8E-01**
Bis2-Chloroethyl Ether C	0	--	--	na	5.3E+00	--	--	na	5.3E+00	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**5.3E+00**
Bis2-Chloroisopropyl Ether	0	--	--	na	6.5E+04	--	--	na	6.5E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**6.5E+04**
Bis 2-Ethylhexyl Phthalate C	0	--	--	na	2.2E+01	--	--	na	2.2E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.2E+01**
Bromoform C	0	--	--	na	1.4E+03	--	--	na	1.4E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.4E+03**
Butylbenzylphthalate	0	--	--	na	1.9E+03	--	--	na	1.9E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.9E+03**
Cadmium	0	8.2E-01	3.8E-01	na	--	8.2E-01	3.8E-01	na	--	--	--	--	--	--	--	--	--	**8.2E-01**	**3.8E-01**	**na**	**--**
Carbon Tetrachloride C	0	--	--	na	1.6E+01	--	--	na	1.6E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.6E+01**
Chlordane C	0	2.4E+00	4.3E-03	na	8.1E-03	2.4E+00	4.3E-03	na	8.1E-03	--	--	--	--	--	--	--	--	**2.4E+00**	**4.3E-03**	**na**	**8.1E-03**
Chloride	0	8.6E+05	2.3E+05	na	--	8.6E+05	2.3E+05	na	--	--	--	--	--	--	--	--	--	**8.6E+05**	**2.3E+05**	**na**	**--**
TRC	0	1.9E+01	1.1E+01	na	--	1.9E+01	1.1E+01	na	--	--	--	--	--	--	--	--	--	**1.9E+01**	**1.1E+01**	**na**	**--**
Chlorobenzene	0	--	--	na	1.6E+03	--	--	na	1.6E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.6E+03**

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Chlorodibromomethane[C]	0	--	--	na	1.3E+02	--	--	na	1.3E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.3E+02**
Chloroform	0	--	--	na	1.1E+04	--	--	na	1.1E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.1E+04**
2-Chloronaphthalene	0	--	--	na	1.6E+03	--	--	na	1.6E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.6E+03**
2-Chlorophenol	0	--	--	na	1.5E+02	--	--	na	1.5E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.5E+02**
Chlorpyrifos	0	8.3E-02	4.1E-02	na	--	8.3E-02	4.1E-02	na	--	--	--	--	--	--	--	--	--	**8.3E-02**	**4.1E-02**	**na**	**--**
Chromium III	0	1.8E+02	2.4E+01	na	--	1.8E+02	2.4E+01	na	--	--	--	--	--	--	--	--	--	**1.8E+02**	**2.4E+01**	**na**	**--**
Chromium VI	0	1.6E+01	1.1E+01	na	--	1.6E+01	1.1E+01	na	--	--	--	--	--	--	--	--	--	**1.6E+01**	**1.1E+01**	**na**	**--**
Chromium, Total	0	--	--	1.0E+02	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Chrysene [C]	0	--	--	na	1.8E-02	--	--	na	1.8E-02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.8E-02**
Copper	0	3.6E+00	2.7E+00	na	--	3.6E+00	2.7E+00	na	--	--	--	--	--	--	--	--	--	**3.6E+00**	**2.7E+00**	**na**	**--**
Cyanide, Free	0	2.2E+01	5.2E+00	na	1.6E+04	2.2E+01	5.2E+00	na	1.6E+04	--	--	--	--	--	--	--	--	**2.2E+01**	**5.2E+00**	**na**	**1.6E+04**
DDD [C]	0	--	--	na	3.1E-03	--	--	na	3.1E-03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.1E-03**
DDE [C]	0	--	--	na	2.2E-03	--	--	na	2.2E-03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.2E-03**
DDT [C]	0	1.1E+00	1.0E-03	na	2.2E-03	1.1E+00	1.0E-03	na	2.2E-03	--	--	--	--	--	--	--	--	**1.1E+00**	**1.0E-03**	**na**	**2.2E-03**
Demeton	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	--	--	--	--	--	--	--	**--**	**1.0E-01**	**na**	**--**
Diazinon	0	1.7E-01	1.7E-01	na	--	1.7E-01	1.7E-01	na	--	--	--	--	--	--	--	--	--	**1.7E-01**	**1.7E-01**	**na**	**--**
Dibenz(a,h)anthracene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.8E-01**
1,2-Dichlorobenzene	0	--	--	na	1.3E+03	--	--	na	1.3E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.3E+03**
1,3-Dichlorobenzene	0	--	--	na	9.6E+02	--	--	na	9.6E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**9.6E+02**
1,4-Dichlorobenzene	0	--	--	na	1.9E+02	--	--	na	1.9E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.9E+02**
3,3-Dichlorobenzidine[C]	0	--	--	na	2.8E-01	--	--	na	2.8E-01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.8E-01**
Dichlorobromomethane [C]	0	--	--	na	1.7E+02	--	--	na	1.7E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.7E+02**
1,2-Dichloroethane [C]	0	--	--	na	3.7E+02	--	--	na	3.7E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.7E+02**
1,1-Dichloroethylene	0	--	--	na	7.1E+03	--	--	na	7.1E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**7.1E+03**
1,2-trans-dichloroethylene	0	--	--	na	1.0E+04	--	--	na	1.0E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.0E+04**
2,4-Dichlorophenol	0	--	--	na	2.9E+02	--	--	na	2.9E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.9E+02**
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
1,2-Dichloropropane[C]	0	--	--	na	1.5E+02	--	--	na	1.5E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.5E+02**
1,3-Dichloropropene [C]	0	--	--	na	2.1E+02	--	--	na	2.1E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.1E+02**
Dieldrin [C]	0	2.4E-01	5.6E-02	na	5.4E-04	2.4E-01	5.6E-02	na	5.4E-04	--	--	--	--	--	--	--	--	**2.4E-01**	**5.6E-02**	**na**	**5.4E-04**
Diethyl Phthalate	0	--	--	na	4.4E+04	--	--	na	4.4E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.4E+04**
2,4-Dimethylphenol	0	--	--	na	8.5E+02	--	--	na	8.5E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**8.5E+02**
Dimethyl Phthalate	0	--	--	na	1.1E+06	--	--	na	1.1E+06	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.1E+06**
Di-n-Butyl Phthalate	0	--	--	na	4.5E+03	--	--	na	4.5E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.5E+03**
2,4 Dinitrophenol	0	--	--	na	5.3E+03	--	--	na	5.3E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**5.3E+03**
2-Methyl-4,6-Dinitrophenol	0	--	--	na	2.8E+02	--	--	na	2.8E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.8E+02**
2,4-Dinitrotoluene [C]	0	--	--	na	3.4E+01	--	--	na	3.4E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.4E+01**
Dioxin 2,3,7,8-tetrachlorodibenzo-p-dioxin	0	--	--	na	5.1E-08	--	--	na	5.1E-08	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**5.1E-08**
1,2-Diphenylhydrazine[C]	0	--	--	na	2.0E+00	--	--	na	2.0E+00	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.0E+00**
Alpha-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	2.2E-01	5.6E-02	na	8.9E+01	--	--	--	--	--	--	--	--	**2.2E-01**	**5.6E-02**	**na**	**8.9E+01**
Beta-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	2.2E-01	5.6E-02	na	8.9E+01	--	--	--	--	--	--	--	--	**2.2E-01**	**5.6E-02**	**na**	**8.9E+01**
Alpha + Beta Endosulfan	0	2.2E-01	5.6E-02	--	--	2.2E-01	5.6E-02	--	--	--	--	--	--	--	--	--	--	**2.2E-01**	**5.6E-02**	**--**	**--**
Endosulfan Sulfate	0	--	--	na	8.9E+01	--	--	na	8.9E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**8.9E+01**
Endrin	0	8.6E-02	3.6E-02	na	6.0E-02	8.6E-02	3.6E-02	na	6.0E-02	--	--	--	--	--	--	--	--	**8.6E-02**	**3.6E-02**	**na**	**6.0E-02**
Endrin Aldehyde	0	--	--	na	3.0E-01	--	--	na	3.0E-01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.0E-01**

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Ethylbenzene	0	--	--	na	2.1E+03	--	--	na	2.1E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.1E+03**
Fluoranthene	0	--	--	na	1.4E+02	--	--	na	1.4E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.4E+02**
Fluorene	0	--	--	na	5.3E+03	--	--	na	5.3E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**5.3E+03**
Foaming Agents	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Guthion	0	--	1.0E-02	na	--	--	1.0E-02	na	--	--	--	--	--	--	--	--	--	**--**	**1.0E-02**	**na**	**--**
Heptachlor [C]	0	5.2E-01	3.8E-03	na	7.9E-04	5.2E-01	3.8E-03	na	7.9E-04	--	--	--	--	--	--	--	--	**5.2E-01**	**3.8E-03**	**na**	**7.9E-04**
Heptachlor Epoxide[C]	0	5.2E-01	3.8E-03	na	3.9E-04	5.2E-01	3.8E-03	na	3.9E-04	--	--	--	--	--	--	--	--	**5.2E-01**	**3.8E-03**	**na**	**3.9E-04**
Hexachlorobenzene[C]	0	--	--	na	2.9E-03	--	--	na	2.9E-03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.9E-03**
Hexachlorobutadiene[C]	0	--	--	na	1.8E+02	--	--	na	1.8E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.8E+02**
Hexachlorocyclohexane Alpha-BHC[C]	0	--	--	na	4.9E-02	--	--	na	4.9E-02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.9E-02**
Hexachlorocyclohexane Beta-BHC[C]	0	--	--	na	1.7E-01	--	--	na	1.7E-01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.7E-01**
Hexachlorocyclohexane Gamma-BHC[C] (Lindane)	0	9.5E-01	na	na	1.8E+00	9.5E-01	--	na	1.8E+00	--	--	--	--	--	--	--	--	**9.5E-01**	**--**	**na**	**1.8E+00**
Hexachlorocyclopentadiene	0	--	--	na	1.1E+03	--	--	na	1.1E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.1E+03**
Hexachloroethane[C]	0	--	--	na	3.3E+01	--	--	na	3.3E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.3E+01**
Hydrogen Sulfide	0	--	2.0E+00	na	--	--	2.0E+00	na	--	--	--	--	--	--	--	--	--	**--**	**2.0E+00**	**na**	**--**
Indeno (1,2,3-cd) pyrene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.8E-01**
Iron	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Isophorone[C]	0	--	--	na	9.6E+03	--	--	na	9.6E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**9.6E+03**
Kepone	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	**--**	**0.0E+00**	**na**	**--**
Lead	0	2.0E+01	2.3E+00	na	--	2.0E+01	2.3E+00	na	--	--	--	--	--	--	--	--	--	**2.0E+01**	**2.3E+00**	**na**	**--**
Malathion	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	--	--	--	--	--	--	--	**--**	**1.0E-01**	**na**	**--**
Manganese	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Mercury	0	1.4E+00	7.7E-01	- -	- -	1.4E+00	7.7E-01	- -	- -	--	--	--	--	--	--	--	--	**1.4E+00**	**7.7E-01**	**- -**	**- -**
Methyl Bromide	0	--	--	na	1.5E+03	--	--	na	1.5E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.5E+03**
Methylene Chloride [C]	0	--	--	na	5.9E+03	--	--	na	5.9E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**5.9E+03**
Methoxychlor	0	--	3.0E-02	na	--	--	3.0E-02	na	--	--	--	--	--	--	--	--	--	**--**	**3.0E-02**	**na**	**--**
Mirex	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	**--**	**0.0E+00**	**na**	**--**
Nickel	0	5.6E+01	6.3E+00	na	4.6E+03	5.6E+01	6.3E+00	na	4.6E+03	--	--	--	--	--	--	--	--	**5.6E+01**	**6.3E+00**	**na**	**4.6E+03**
Nitrate (as N)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Nitrobenzene	0	--	--	na	6.9E+02	--	--	na	6.9E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**6.9E+02**
N-Nitrosodimethylamine[C]	0	--	--	na	3.0E+01	--	--	na	3.0E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.0E+01**
N-Nitrosodiphenylamine[C]	0	--	--	na	6.0E+01	--	--	na	6.0E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**6.0E+01**
N-Nitrosodi-n-propylamine[C]	0	--	--	na	5.1E+00	--	--	na	5.1E+00	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**5.1E+00**
Nonylphenol	0	2.8E+01	6.6E+00	--	--	2.8E+01	6.6E+00	na	--	--	--	--	--	--	--	--	--	**2.8E+01**	**6.6E+00**	**na**	**--**
Parathion	0	6.5E-02	1.3E-02	na	--	6.5E-02	1.3E-02	na	--	--	--	--	--	--	--	--	--	**6.5E-02**	**1.3E-02**	**na**	**--**
PCB Total[C]	0	--	1.4E-02	na	6.4E-04	--	1.4E-02	na	6.4E-04	--	--	--	--	--	--	--	--	**--**	**1.4E-02**	**na**	**6.4E-04**
Pentachlorophenol [C]	0	2.9E+01	2.2E+01	na	3.0E+01	2.9E+01	2.2E+01	na	3.0E+01	--	--	--	--	--	--	--	--	**2.9E+01**	**2.2E+01**	**na**	**3.0E+01**
Phenol	0	--	--	na	8.6E+05	--	--	na	8.6E+05	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**8.6E+05**
Pyrene	0	--	--	na	4.0E+03	--	--	na	4.0E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.0E+03**
Radionuclides	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Gross Alpha Activity (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Beta and Photon Activity (mrem/yr)	0	--	--	na	4.0E+00	--	--	na	4.0E+00	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.0E+00**
Radium 226 + 228 (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Uranium (ug/l)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Selenium, Total Recoverable	0	2.0E+01	5.0E+00	na	4.2E+03	2.0E+01	5.0E+00	na	4.2E+03	--	--	--	--	--	--	--	--	**2.0E+01**	**5.0E+00**	**na**	**4.2E+03**
Silver	0	3.2E-01	--	na	--	3.2E-01	--	na	--	--	--	--	--	--	--	--	--	**3.2E-01**	**--**	**na**	**--**
Sulfate	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
1,1,2,2-Tetrachloroethane[C]	0	--	--	na	4.0E+01	--	--	na	4.0E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.0E+01**
Tetrachloroethylene[C]	0	--	--	na	3.3E+01	--	--	na	3.3E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.3E+01**
Thallium	0	--	--	na	4.7E-01	--	--	na	4.7E-01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.7E-01**
Toluene	0	--	--	na	6.0E+03	--	--	na	6.0E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**6.0E+03**
Total dissolved solids	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Toxaphene [C]	0	7.3E-01	2.0E-04	na	2.8E-03	7.3E-01	2.0E-04	na	2.8E-03	--	--	--	--	--	--	--	--	**7.3E-01**	**2.0E-04**	**na**	**2.8E-03**
Tributyltin	0	4.6E-01	7.2E-02	na	--	4.6E-01	7.2E-02	na	--	--	--	--	--	--	--	--	--	**4.6E-01**	**7.2E-02**	**na**	**--**
1,2,4-Trichlorobenzene	0	--	--	na	7.0E+01	--	--	na	7.0E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**7.0E+01**
1,1,2-Trichloroethane[C]	0	--	--	na	1.6E+02	--	--	na	1.6E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.6E+02**
Trichloroethylene [C]	0	--	--	na	3.0E+02	--	--	na	3.0E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.0E+02**
2,4,6-Trichlorophenol [C]	0	--	--	na	2.4E+01	--	--	na	2.4E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.4E+01**
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Vinyl Chloride[C]	0	--	--	na	2.4E+01	--	--	na	2.4E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.4E+01**
Zinc	0	3.6E+01	3.6E+01	na	2.6E+04	3.6E+01	3.6E+01	na	2.6E+04	--	--	--	--	--	--	--	--	**3.6E+01**	**3.6E+01**	**na**	**2.6E+04**

Notes:

1. All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
2. Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
3. Metals measured as Dissolved, unless specified otherwise
4. "C" indicates a carcinogenic parameter
5. Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information.
   Antidegradation WLAs are based upon a complete mix.
6. Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic
   = (0.1(WQC - background conc.) + background conc.) for human health
7. WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens and Harmonic Mean for Carcinogens. To apply mixing ratios from a model set the stream flow equal to (mixing ratio - 1), effluent flow equal to 1 and 100% mix.

Metal	Target Value (SSTV)
Antimony	6.4E+02
Arsenic	9.0E+01
Barium	na
Cadmium	2.3E-01
Chromium III	1.4E+01
Chromium VI	6.4E+00
Copper	1.5E+00
Iron	na
Lead	1.4E+00
Manganese	na
Mercury	4.6E-01
Nickel	3.8E+00
Selenium	3.0E+00
Silver	1.3E-01
Zinc	1.4E+01

Note: do not use QL's lower than the minimum QL's provided in agency guidance

2005 MSTRANTI:
Basis for 2005 permit limitations carried forward in this reissuance

FRESHWATER
WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: Haynesville Correctional Facility

Permit No.: VA0023469

Receiving Stream: UT Garland's Mill Pond

Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information

Mean Hardness (as CaCO3) =	39.3 mg/L
90% Temperature (Annual) =	20.38 deg C
90% Temperature (Wet season) =	NA deg C
90% Maximum pH =	6.79 SU
10% Maximum pH =	NA SU
Tier Designation (1 or 2) =	1
Public Water Supply (PWS) Y/N? =	N
Trout Present Y/N? =	N
Early Life Stages Present Y/N? =	Y

Stream Flows

1Q10 (Annual) =	0 MGD
7Q10 (Annual) =	0 MGD
30Q10 (Annual) =	0 MGD
1Q10 (Wet season) =	0 MGD
30Q10 (Wet season)	0 MGD
30Q5 =	0 MGD
Harmonic Mean =	0 MGD
Annual Average =	0 MGD

Mixing Information

Annual - 1Q10 Mix =	100 %
- 7Q10 Mix =	100 %
- 30Q10 Mix =	100 %
Wet Season - 1Q10 Mix =	100 %
- 30Q10 Mix =	100 %

Effluent Information

Mean Hardness (as CaCO3) =	32 mg/L
90% Temp (Annual) =	29.7 deg C
90% Temp (Wet season) =	22.7 deg C
90% Maximum pH =	8.7 SU
10% Maximum pH =	NA SU
Discharge Flow =	0.178 MGD

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Acenapthene	0	--	--	na	2.7E+03	--	--	na	2.7E+03	--	--	--	--	--	--	--	--	--	--	na	2.7E+03
Acrolein	0	--	--	na	7.8E+02	--	--	na	7.8E+02	--	--	--	--	--	--	--	--	--	--	na	7.8E+02
Acrylonitrile [C]	0	--	--	na	6.6E+00	--	--	na	6.6E+00	--	--	--	--	--	--	--	--	--	--	na	6.6E+00
Aldrin [C]	0	3.0E+00	--	na	1.4E-03	3.0E+00	--	na	1.4E-03	--	--	--	--	--	--	--	--	3.0E+00	--	na	1.4E-03
Ammonia-N (mg/l) (Yearly)	0	2.20E+00	2.92E-01	na	--	2.2E+00	2.9E-01	na	--	--	--	--	--	--	--	--	--	2.2E+00	2.9E-01	na	--
Ammonia-N (mg/l) (High Flow)	0	2.20E+00	#VALUE!	na	--	2.2E+00	#######	na	--	--	--	--	--	--	--	--	--	2.2E+00	#VALUE!	na	--
Anthracene	0	--	--	na	1.1E+05	--	--	na	1.1E+05	--	--	--	--	--	--	--	--	--	--	na	1.1E+05
Antimony	0	--	--	na	4.3E+03	--	--	na	4.3E+03	--	--	--	--	--	--	--	--	--	--	na	4.3E+03
Arsenic	0	3.4E+02	1.5E+02	na	--	3.4E+02	1.5E+02	na	--	--	--	--	--	--	--	--	--	3.4E+02	1.5E+02	na	--
Barium	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Benzene [C]	0	--	--	na	7.1E+02	--	--	na	7.1E+02	--	--	--	--	--	--	--	--	--	--	na	7.1E+02
Benzidine [C]	0	--	--	na	5.4E-03	--	--	na	5.4E-03	--	--	--	--	--	--	--	--	--	--	na	5.4E-03
Benzo (a) anthracene [C]	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na	4.9E-01
Benzo (b) fluoranthene [C]	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na	4.9E-01
Benzo (k) fluoranthene [C]	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na	4.9E-01
Benzo (a) pyrene [C]	0	--	--	na	1.4E+01	--	--	na	1.4E+01	--	--	--	--	--	--	--	--	--	--	na	1.4E+01
Bis2-Chloroethyl Ether	0	--	--	na	1.7E+05	--	--	na	1.7E+05	--	--	--	--	--	--	--	--	--	--	na	1.7E+05
Bis2-Chloroisopropyl Ether	0	--	--	na	3.6E+03	--	--	na	3.6E+03	--	--	--	--	--	--	--	--	--	--	na	3.6E+03
Bromoform [C]	0	--	--	na	5.2E+03	--	--	na	5.2E+03	--	--	--	--	--	--	--	--	--	--	na	5.2E+03
Butylbenzylphthalate	0	1.1E+00	4.6E-01	na	--	1.1E+00	4.6E-01	na	--	--	--	--	--	--	--	--	--	1.1E+00	4.6E-01	na	--
Cadmium	0	--	--	na	4.4E+01	--	--	na	4.4E+01	--	--	--	--	--	--	--	--	--	--	na	4.4E+01
Carbon Tetrachloride [C]	0	2.4E+00	4.3E-03	na	2.2E-02	2.4E+00	4.3E-03	na	2.2E-02	--	--	--	--	--	--	--	--	2.4E+00	4.3E-03	na	2.2E-02
Chlordane [C]	0	8.6E+05	2.3E+05	na	--	8.6E+05	2.3E+05	na	--	--	--	--	--	--	--	--	--	8.6E+05	2.3E+05	na	--
Chloride	0	1.9E+01	1.1E+01	na	--	1.9E+01	1.1E+01	na	--	--	--	--	--	--	--	--	--	1.9E+01	1.1E+01	na	--
TRC	0	--	--	na	2.1E+04	--	--	na	2.1E+04	--	--	--	--	--	--	--	--	--	--	na	2.1E+04
Chlorobenzene	0																				

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Chlorodibromomethane[C]	0	--	--	na	3.4E+02	--	--	na	3.4E+02	--	--	--	--	--	--	--	--	--	--	na	**3.4E+02**
Chloroform [C]	0	--	--	na	2.9E+04	--	--	na	2.9E+04	--	--	--	--	--	--	--	--	--	--	na	**2.9E+04**
2-Chloronaphthalene	0	--	--	na	4.3E+03	--	--	na	4.3E+03	--	--	--	--	--	--	--	--	--	--	na	**4.3E+03**
2-Chlorophenol	0	--	--	na	4.0E+02	--	--	na	4.0E+02	--	--	--	--	--	--	--	--	--	--	na	**4.0E+02**
Chlorpyrifos	0	8.3E-02	4.1E-02	na	--	8.3E-02	4.1E-02	na	--	--	--	--	--	--	--	--	--	**8.3E-02**	**4.1E-02**	na	--
Chromium III	0	2.2E+02	2.9E+01	na	--	2.2E+02	2.9E+01	na	--	--	--	--	--	--	--	--	--	**2.2E+02**	**2.9E+01**	na	--
Chromium VI	0	1.6E+01	1.1E+01	na	--	1.6E+01	1.1E+01	na	--	--	--	--	--	--	--	--	--	**1.6E+01**	**1.1E+01**	na	--
Chromium, Total	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Chrysene [C]	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na	**4.9E-01**
Copper	0	4.6E+00	3.4E+00	na	--	4.6E+00	3.4E+00	na	--	--	--	--	--	--	--	--	--	**4.6E+00**	**3.4E+00**	na	--
Cyanide	0	2.2E+01	5.2E+00	na	2.2E+05	2.2E+01	5.2E+00	na	2.2E+05	--	--	--	--	--	--	--	--	**2.2E+01**	**5.2E+00**	na	**2.2E+05**
DDD [C]	0	--	--	na	8.4E-03	--	--	na	8.4E-03	--	--	--	--	--	--	--	--	--	--	na	[illegible]
DDE [C]	0	--	--	na	5.9E-03	--	--	na	5.9E-03	--	--	--	--	--	--	--	--	--	--	na	[illegible]
DDT [C]	0	1.1E+00	1.0E-03	na	5.9E-03	1.1E+00	1.0E-03	na	5.9E-03	--	--	--	--	--	--	--	--	**1.1E+00**	**1.0E-03**	na	**5.9E-03**
Demeton	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	--	--	--	--	--	--	--	--	**1.0E-01**	na	--
Dibenz(a,h)anthracene [C]	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na	**4.9E-01**
Dibutyl phthalate	0	--	--	na	1.2E+04	--	--	na	1.2E+04	--	--	--	--	--	--	--	--	--	--	na	**1.2E+04**
Dichloromethane (Methylene Chloride) [C]	0	--	--	na	1.6E+04	--	--	na	1.6E+04	--	--	--	--	--	--	--	--	--	--	na	**1.6E+04**
1,2-Dichlorobenzene	0	--	--	na	1.7E+04	--	--	na	1.7E+04	--	--	--	--	--	--	--	--	--	--	na	**1.7E+04**
1,3-Dichlorobenzene	0	--	--	na	2.6E+03	--	--	na	2.6E+03	--	--	--	--	--	--	--	--	--	--	na	**2.6E+03**
1,4-Dichlorobenzene	0	--	--	na	2.6E+03	--	--	na	2.6E+03	--	--	--	--	--	--	--	--	--	--	na	**2.6E+03**
3,3-Dichlorobenzidine[C]	0	--	--	na	7.7E-01	--	--	na	7.7E-01	--	--	--	--	--	--	--	--	--	--	na	**7.7E-01**
Dichlorobromomethane [C]	0	--	--	na	4.6E+02	--	--	na	4.6E+02	--	--	--	--	--	--	--	--	--	--	na	**4.6E+02**
1,2-Dichloroethane [C]	0	--	--	na	9.9E+02	--	--	na	9.9E+02	--	--	--	--	--	--	--	--	--	--	na	**9.9E+02**
1,1-Dichloroethylene	0	--	--	na	1.7E+04	--	--	na	1.7E+04	--	--	--	--	--	--	--	--	--	--	na	**1.7E+04**
1,2-trans-dichloroethylene	0	--	--	na	1.4E+05	--	--	na	1.4E+05	--	--	--	--	--	--	--	--	--	--	na	**1.4E+05**
2,4-Dichlorophenol	0	--	--	na	7.9E+02	--	--	na	7.9E+02	--	--	--	--	--	--	--	--	--	--	na	**7.9E+02**
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
1,2-Dichloropropane[C]	0	--	--	na	3.9E+02	--	--	na	3.9E+02	--	--	--	--	--	--	--	--	--	--	na	[illegible]
1,3-Dichloropropene	0	--	--	na	1.7E+03	--	--	na	1.7E+03	--	--	--	--	--	--	--	--	--	--	na	[illegible]
Dieldrin [C]	0	2.4E-01	5.6E-02	na	1.4E-03	2.4E-01	5.6E-02	na	1.4E-03	--	--	--	--	--	--	--	--	**2.4E-01**	**5.6E-02**	na	**1.4E-03**
Diethyl Phthalate	0	--	--	na	1.2E+05	--	--	na	1.2E+05	--	--	--	--	--	--	--	--	--	--	na	**1.2E+05**
Di-2-Ethylhexyl Phthalate [C]	0	--	--	na	5.9E+01	--	--	na	5.9E+01	--	--	--	--	--	--	--	--	--	--	na	**5.9E+01**
2,4-Dimethylphenol	0	--	--	na	2.3E+03	--	--	na	2.3E+03	--	--	--	--	--	--	--	--	--	--	na	**2.3E+03**
Dimethyl Phthalate	0	--	--	na	2.9E+06	--	--	na	2.9E+06	--	--	--	--	--	--	--	--	--	--	na	**2.9E+06**
Di-n-Butyl Phthalate	0	--	--	na	1.2E+04	--	--	na	1.2E+04	--	--	--	--	--	--	--	--	--	--	na	**1.2E+04**
2,4 Dinitrophenol	0	--	--	na	1.4E+04	--	--	na	1.4E+04	--	--	--	--	--	--	--	--	--	--	na	**1.4E+04**
2-Methyl-4,6-Dinitrophenol	0	--	--	na	7.65E+02	--	--	na	7.7E+02	--	--	--	--	--	--	--	--	--	--	na	**7.7E+02**
2,4-Dinitrotoluene [C]	0	--	--	na	9.1E+01	--	--	na	9.1E+01	--	--	--	--	--	--	--	--	--	--	na	**9.1E+01**
Dioxin (2,3,7,8-tetrachlorodibenzo-p-dioxin) (ppq)	0	--	--	na	1.2E-06	--	--	na	na	--	--	--	--	--	--	--	--	--	--	na	na
1,2-Diphenylhydrazine[C]	0	--	--	na	5.4E+00	--	--	na	5.4E+00	--	--	--	--	--	--	--	--	--	--	na	**5.4E+00**
Alpha-Endosulfan	0	2.2E-01	5.6E-02	na	2.4E+02	2.2E-01	5.6E-02	na	2.4E+02	--	--	--	--	--	--	--	--	**2.2E-01**	**5.6E-02**	na	**2.4E+02**
Beta-Endosulfan	0	2.2E-01	5.6E-02	na	2.4E+02	2.2E-01	5.6E-02	na	2.4E+02	--	--	--	--	--	--	--	--	**2.2E-01**	**5.6E-02**	na	**2.4E+02**
Endosulfan Sulfate	0	--	--	na	2.4E+02	--	--	na	2.4E+02	--	--	--	--	--	--	--	--	--	--	na	**2.4E+02**
Endrin	0	8.6E-02	3.6E-02	na	8.1E-01	8.6E-02	3.6E-02	na	8.1E-01	--	--	--	--	--	--	--	--	**8.6E-02**	**3.6E-02**	na	**8.1E-01**
Endrin Aldehyde	0	--	--	na	8.1E-01	--	--	na	8.1E-01	--	--	--	--	--	--	--	--	--	--	na	**8.1E-01**

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Ethylbenzene	0	--	--	na	2.9E+04	--	--	na	2.9E+04	--	--	--	--	--	--	--	--	--	--	na	**2.9E+04**
Fluoranthene	0	--	--	na	3.7E+02	--	--	na	3.7E+02	--	--	--	--	--	--	--	--	--	--	na	**3.7E+02**
Fluorene	0	--	--	na	1.4E+04	--	--	na	1.4E+04	--	--	--	--	--	--	--	--	--	--	na	**1.4E+04**
Foaming Agents	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	**--**
Guthion	0	--	1.0E-02	na	--	--	1.0E-02	na	--	--	--	--	--	--	--	--	--	--	**1.0E-02**	na	**--**
Heptachlor [C]	0	5.2E-01	3.8E-03	na	2.1E-03	5.2E-01	3.8E-03	na	2.1E-03	--	--	--	--	--	--	--	--	**5.2E-01**	**3.8E-03**	na	**2.1E-03**
Heptachlor Epoxide[C]	0	5.2E-01	3.8E-03	na	1.1E-03	5.2E-01	3.8E-03	na	1.1E-03	--	--	--	--	--	--	--	--	**5.2E-01**	**3.8E-03**	na	**1.1E-03**
Hexachlorobenzene[C]	0	--	--	na	7.7E-03	--	--	na	7.7E-03	--	--	--	--	--	--	--	--	--	--	na	**7.7E-03**
Hexachlorobutadiene[C]	0	--	--	na	5.0E+02	--	--	na	5.0E+02	--	--	--	--	--	--	--	--	--	--	na	**5.0E+02**
Hexachlorocyclohexane Alpha-BHC[C]	0	--	--	na	1.3E-01	--	--	na	1.3E-01	--	--	--	--	--	--	--	--	--	--	na	**1.3E-01**
Hexachlorocyclohexane Beta-BHC[C]	0	--	--	na	4.6E-01	--	--	na	4.6E-01	--	--	--	--	--	--	--	--	--	--	na	**4.6E-01**
Hexachlorocyclohexane Gamma-BHC[C] (Lindane)	0	9.5E-01	na	na	6.3E-01	9.5E-01	--	na	6.3E-01	--	--	--	--	--	--	--	--	**9.5E-01**	--	na	**6.3E-01**
Hexachlorocyclopentadiene	0	--	--	na	1.7E+04	--	--	na	1.7E+04	--	--	--	--	--	--	--	--	--	--	na	**1.7E+04**
Hexachloroethane[C]	0	--	--	na	8.9E+01	--	--	na	8.9E+01	--	--	--	--	--	--	--	--	--	--	na	**8.9E+01**
Hydrogen Sulfide	0	--	2.0E+00	na	--	--	2.0E+00	na	--	--	--	--	--	--	--	--	--	--	**2.0E+00**	na	**--**
Indeno (1,2,3-cd) pyrene [C]	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na	**4.9E-01**
Iron	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	**--**
Isophorone[C]	0	--	--	na	2.6E+04	--	--	na	2.6E+04	--	--	--	--	--	--	--	--	--	--	na	**2.6E+04**
Kepone	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	**0.0E+00**	na	**--**
Lead	0	2.8E+01	3.2E+00	na	--	2.8E+01	3.2E+00	na	--	--	--	--	--	--	--	--	--	**2.8E+01**	**3.2E+00**	na	**--**
Malathion	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	--	--	--	--	--	--	--	--	**1.0E-01**	na	**--**
Manganese	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	**--**
Mercury	0	1.4E+00	7.7E-01	na	5.1E-02	1.4E+00	7.7E-01	na	5.1E-02	--	--	--	--	--	--	--	--	**1.4E+00**	**7.7E-01**	na	**5.1E-02**
Methyl Bromide	0	--	--	na	4.0E+03	--	--	na	4.0E+03	--	--	--	--	--	--	--	--	--	--	na	**4.0E+03**
Methoxychlor	0	--	3.0E-02	na	--	--	3.0E-02	na	--	--	--	--	--	--	--	--	--	--	**3.0E-02**	na	**--**
Mirex	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	**0.0E+00**	na	**--**
Monochlorobenzene	0	--	--	na	2.1E+04	--	--	na	2.1E+04	--	--	--	--	--	--	--	--	--	--	na	**2.1E+04**
Nickel	0	7.0E+01	7.7E+00	na	4.6E+03	7.0E+01	7.7E+00	na	4.6E+03	--	--	--	--	--	--	--	--	**7.0E+01**	**7.7E+00**	na	**4.6E+03**
Nitrate (as N)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	**--**
Nitrobenzene	0	--	--	na	1.9E+03	--	--	na	1.9E+03	--	--	--	--	--	--	--	--	--	--	na	**1.9E+03**
N-Nitrosodimethylamine[C]	0	--	--	na	8.1E+01	--	--	na	8.1E+01	--	--	--	--	--	--	--	--	--	--	na	**8.1E+01**
N-Nitrosodiphenylamine[C]	0	--	--	na	1.6E+02	--	--	na	1.6E+02	--	--	--	--	--	--	--	--	--	--	na	**1.6E+02**
N-Nitrosodi-n-propylamine[C]	0	--	--	na	1.4E+01	--	--	na	1.4E+01	--	--	--	--	--	--	--	--	--	--	na	**1.4E+01**
Parathion	0	6.5E-02	1.3E-02	na	--	6.5E-02	1.3E-02	na	--	--	--	--	--	--	--	--	--	**6.5E-02**	**1.3E-02**	na	**--**
PCB-1016	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	--	**1.4E-02**	na	**--**
PCB-1221	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	--	**1.4E-02**	na	**--**
PCB-1232	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	--	**1.4E-02**	na	**--**
PCB-1242	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	--	**1.4E-02**	na	**--**
PCB-1248	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	--	**1.4E-02**	na	**--**
PCB-1254	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	--	**1.4E-02**	na	**--**
PCB-1260	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	--	**1.4E-02**	na	**--**
PCB Total[C]	0	--	--	na	1.7E-03	--	--	na	1.7E-03	--	--	--	--	--	--	--	--	--	--	na	**1.7E-03**

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Pentachlorophenol [C]	0	7.7E-03	5.9E-03	na	8.2E+01	7.7E-03	5.9E-03	na	8.2E+01	--	--	--	--	--	--	--	--	**7.7E-03**	**5.9E-03**	**na**	**8.2E+01**
Phenol	0	--	--	na	4.6E+06	--	--	na	4.6E+06	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.6E+06**
Pyrene	0	--	--	na	1.1E+04	--	--	na	1.1E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.1E+04**
Radionuclides (pCi/l except Beta/Photon)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Gross Alpha Activity	0	--	--	na	1.5E+01	--	--	na	1.5E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.5E+01**
Beta and Photon Activity (mrem/yr)	0	--	--	na	4.0E+00	--	--	na	4.0E+00	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.0E+00**
Strontium-90	0	--	--	na	8.0E+00	--	--	na	8.0E+00	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**8.0E+00**
Tritium	0	--	--	na	2.0E+04	--	--	na	2.0E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.0E+04**
Selenium	0	2.0E+01	5.0E+00	na	1.1E+04	2.0E+01	5.0E+00	na	1.1E+04	--	--	--	--	--	--	--	--	**2.0E+01**	**5.0E+00**	**na**	**1.1E+04**
Silver	0	4.9E-01	--	na	--	4.9E-01	--	na	--	--	--	--	--	--	--	--	--	**4.9E-01**	**--**	**na**	**--**
Sulfate	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
1,1,2,2-Tetrachloroethane [C]	0	--	--	na	1.1E+02	--	--	na	1.1E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.1E+02**
Tetrachloroethylene [C]	0	--	--	na	8.9E+01	--	--	na	8.9E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**8.9E+01**
Thallium	0	--	--	na	6.3E+00	--	--	na	6.3E+00	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**6.3E+00**
Toluene	0	--	--	na	2.0E+05	--	--	na	2.0E+05	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.0E+05**
Total dissolved solids	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Toxaphene [C]	0	7.3E-01	2.0E-04	na	7.5E-03	7.3E-01	2.0E-04	na	7.5E-03	--	--	--	--	--	--	--	--	**7.3E-01**	**2.0E-04**	**na**	**7.5E-03**
Tributyltin	0	4.6E-01	6.3E-02	na	--	4.6E-01	6.3E-02	na	--	--	--	--	--	--	--	--	--	**4.6E-01**	**6.3E-02**	**na**	**--**
1,2,4-Trichlorobenzene	0	--	--	na	9.4E+02	--	--	na	9.4E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**9.4E+02**
1,1,2-Trichloroethane [C]	0	--	--	na	4.2E+02	--	--	na	4.2E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.2E+02**
Trichloroethylene [C]	0	--	--	na	8.1E+02	--	--	na	8.1E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**8.1E+02**
2,4,6-Trichlorophenol [C]	0	--	--	na	6.5E+01	--	--	na	6.5E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**6.5E+01**
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Vinyl Chloride [C]	0	--	--	na	6.1E+01	--	--	na	6.1E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**6.1E+01**
Zinc	0	4.5E+01	4.5E+01	na	6.9E+04	4.5E+01	4.5E+01	na	6.9E+04	--	--	--	--	--	--	--	--	**4.5E+01**	**4.5E+01**	**na**	**6.9E+04**

Notes:

1. All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
2. Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
3. Metals measured as Dissolved, unless specified otherwise
4. "C" indicates a carcinogenic parameter
5. Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information. Antidegradation WLAs are based upon a complete mix.
6. Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic
   = (0.1(WQC - background conc.) + background conc.) for human health
7. WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens, Harmonic Mean for Carcinogens, and Annual Average for Dioxin. Mixing ratios may be substituted for stream flows where appropriate.

Metal	Target Value (SSTV)
Antimony	4.3E+03
Arsenic	9.0E+01
Barium	na
Cadmium	2.8E-01
Chromium III	1.7E+01
Chromium VI	6.4E+00
Copper	1.8E+00
Iron	na
Lead	1.9E+00
Manganese	na
Mercury	5.1E-02
Nickel	4.6E+00
Selenium	3.0E+00
Silver	1.9E-01
Zinc	1.8E+01

Note: do not use QL's lower than the minimum QL's provided in agency guidance

5/19/2010 5:40:09 PM

Facility = Haynesville Correctional Facility
Chemical = Dissolved Zinc
Chronic averaging period = 4
WLAa = 36 ug/L
WLAc = 36 ug/L
Q.L. = 14 ug/L
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 1
Expected Value = 35
Variance = 441
C.V. = 0.6
97th percentile daily values = 85.1696
97th percentile 4 day average = 58.2326
97th percentile 30 day average= 42.2118
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Acute Toxicity
Maximum Daily Limit = 36
Average Weekly Limit = 36
Average Monthly Limit = 36

The data are:

35 ug/L

5/19/2010 5:39:09 PM

Facility = Haynesville Correctional Facility
Chemical = Dissolved Copper
Chronic averaging period = 4
WLAa = 3.6 ug/L
WLAc = 2.7 ug/L
Q.L. = 1.5 ug/L
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 1
Expected Value = 15
Variance = 81
C.V. = 0.6
97th percentile daily values = 36.5012
97th percentile 4 day average = 24.9568
97th percentile 30 day average= 18.0907
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Acute Toxicity
Maximum Daily Limit = 3.6
Average Weekly Limit = 3.6
Average Monthly Limit = 3.6

The data are:

15 ug/L

2/23/2005 10:12:46 AM

Facility = Haynesville Correctional Facility
Chemical = Dissolved Copper
Chronic averaging period = 4
WLAa = 4.6 ug/L
WLAc = 3.4 ug/L
Q.L. = 3 ug/L
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 7
Expected Value = 11.4285
Variance = 47.0204
C.V. = 0.6
97th percentile daily values = 27.8104
97th percentile 4 day average = 19.0147
97th percentile 30 day average= 13.7834
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Acute Toxicity
Maximum Daily Limit = 4.6
Average Weekly Limit = 4.6
Average Monthly Limit = 4.6

The data are:

29 ug/L
17 ug/L
5 ug/L
6 ug/L
6 ug/L
7 ug/L
10 ug/L

The above 2005 statistical analysis is the basis for the interim copper limitation.

3/11/2004 1:57:13 PM

Facility = Haynesville Correctional Facility
Chemical = Dissolved Cadmium
Chronic averaging period = 4
WLAa = 1.1 ug/L
WLAc = 0.46 ug/L
Q.L. = 0.3 ug/L
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 2
Expected Value = 2.685
Variance = 2.59532
C.V. = 0.6
97th percentile daily values = 6.53372
97th percentile 4 day average = 4.46727
97th percentile 30 day average= 3.23825
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Chronic Toxicity
Maximum Daily Limit = 0.672784400664487
Average Weekly Limit = 0.672784400664487
Average Monthly Limit = 0.672784400664487

The data are:

5 ug/L
0.37 ug/L

The above 2005 statistical analysis is the basis for the cadmium limitation carried forward in this permit reissuance.

11/2004 1:57:13 PM

Facility = Haynesville Correctional Facility
Chemical = Dissolved Silver
Chronic averaging period = 4
WLAa = 0.49 ug/L
WLAc =
Q.L. = 0.2 ug/L
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 1
Expected Value = 0.264
Variance = 0.025090
C.V. = 0.6
97th percentile daily values = 0.642422
97th percentile 4 day average = 0.439240
97th percentile 30 day average= 0.318398
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Acute Toxicity
Maximum Daily Limit = 0.49
Average Weekly Limit = 0.49
Average Monthly Limit = 0.49

The data are:

0.264 ug/L

The above 2005 statistical analysis is the basis for the silver limitation carried forward in this permit reissuance.

5/19/2010 5:27:33 PM

Facility = Haynesville Correctional Facility
Chemical = Dissolved Lead
Chronic averaging period = 4
WLAa = 20 ug/L
WLAc = 2.3 ug/L
Q.L. = 0.1 ug/L
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 1
Expected Value = .17
Variance = .010404
C.V. = 0.6
97th percentile daily values = .413680
97th percentile 4 day average = .282844
97th percentile 30 day average= .205029
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

No Limit is required for this material

The data are:

0.17 ug/L

5/19/2010 5:50:34 PM

Facility = Haynesville Correctional Facility
Chemical = Ammonia
Chronic averaging period = 30
WLAa = 3.59 mg/L
WLAc = 0.437 mg/L
Q.L. = 0.2 mg/L
# samples/mo. = 12
# samples/wk. = 3

Summary of Statistics:

observations = 1
Expected Value = 9
Variance = 29.16
C.V. = 0.6
97th percentile daily values = 21.9007
97th percentile 4 day average = 14.9741
97th percentile 30 day average= 10.8544
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Chronic Toxicity
Maximum Daily Limit = 0.881721830822928
Average Weekly Limit = 0.64492987823883
Average Monthly Limit = 0.480388463968849

The data are:

9.00 mg/L

The calculated limitation is greater than the limitations assigned in the 2005 permit. Antibacksliding regulations prevent the relaxation of effective limitations; consequently, the 2005 permit limitation will be carried forward in this reissuance.

4/15/2004 4:24:03 PM

Facility = Haynesville Correctional Facility
Chemical = Ammonia
Chronic averaging period = 30
WLAa = 2.2 mg/L
WLAc = 0.29 mg/L
Q.L. = 0.2 mg/L
# samples/mo. = 12
# samples/wk. = 3

Summary of Statistics:

observations = 1
Expected Value = 9
Variance = 29.16
C.V. = 0.6
97th percentile daily values = 21.9007
97th percentile 4 day average = 14.9741
97th percentile 30 day average= 10.8544
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Chronic Toxicity
Maximum Daily Limit = 0.58512432709073
Average Weekly Limit = 0.42798550272142
Average Monthly Limit = 0.318793259842028

The data are:

9.00 mg/L

The above 2005 statistical analysis is the basis for the ammonia limitation carried forward in this permit reissuance.

5/19/2010 5:42:23 PM

Facility = Haynesville Correctional Facility
Chemical = chlorides
Chronic averaging period = 4
WLAa = 860000 ug/L
WLAc = 230000 ug/L
Q.L. = 10 ug/L
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 1
Expected Value = 53700
Variance = 1038128
C.V. = 0.6
97th percentile daily values = 130674.
97th percentile 4 day average = 89345.5
97th percentile 30 day average= 64765.0
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

No Limit is required for this material

The data are:

53700 ug/L

5/19/2010 5:41:30 PM

Facility = Haynesville Correctional Facility (101)
Chemical = TRC
Chronic averaging period = 4
WLAa = 19 ug/L
WLAc = 11 ug/L
Q.L. = 10 ug/L
# samples/mo. = 30
# samples/wk. = 7

Summary of Statistics:

observations = 1
Expected Value = 20000
Variance = 1440000
C.V. = 0.6
97th percentile daily values = 48668.3
97th percentile 4 day average = 33275.8
97th percentile 30 day average= 24121.0
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Chronic Toxicity
Maximum Daily Limit = 16.0883226245855
Average Weekly Limit = 9.8252545713861
Average Monthly Limit = 7.9737131838758

The data are:

20000 ug/L

Attachment G

CTC and Design Standards

Virginia Department of Environmental Quality
APPLICATION for CERTIFICATE TO CONSTRUCT (CTC)
For Municipal Sewage Collection, Treatment, and/or Reclamation Systems

See Instructions. Do not submit plans and specifications. Submit 1 copy of this form with all attachments. Form will expand as you enter information.

Project Title: (as it appears on plans) Upgrade Haynesville Wastewater Treatment Plant P.E. Seal Date on Cover: 1/4/10 Specifications Title and Date: Upgrade Haynesville Wastewater Treatment Plant 1/4/10	
Location of Project: Haynesville Correctional Center	County/City: Haynesville VA
Receiving Wastewater Collection System(s): N/A	
Receiving Sewage Treatment Plant(s)/Reclamation System: N/A	
PROJECT OWNER:Virginia Department of Corrections	**PROJECT ENGINEER**
Name & Title: Gary Weddle, Capital Outlay Manager	Name: Jeffrey J. Haas, PE
Signature and date: 3/17/10	Company Name: Austin Brockenbrough and Associates, LLP
Address: 6900 Atmore Drive, PO Box 26963, Richmond VA 23225	Address: 1011 Boulder Springs Drive, Suite 200, Richmond VA 23225
Phone: 804-674-3102 x1223	Phone: 804-592-3902
Email: gary.weddle@vadoc.virginia.gov	Email: jhaas@brockenbrough.com

For Sewage Treatment Works and Sewage Collection Systems:

Attach Project Description

Attach Letter(s) of Acceptance from Receiving Facility/Utility for sewage collection system projects

Attach Reliability Class: (1) For Pump Stations attach Reliability Class Worksheet. (2) For Sewage Treatment Plants note the Reliability Class rating from the VPDES or VPA permit and method of meeting reliability classification requirements.

For a sewage treatment plant project, provide the VPDES or VPA permit number: VA0023469
Design Sewage Flow (Sewage Plant): (a) average daily flow (MGD): 0.178 (b) peak daily flow (MGD): 0.267
Design Sewage Flow (Pump Station): (a) average daily flow (MGD): _____ (b) peak hour flow (MGD): _____

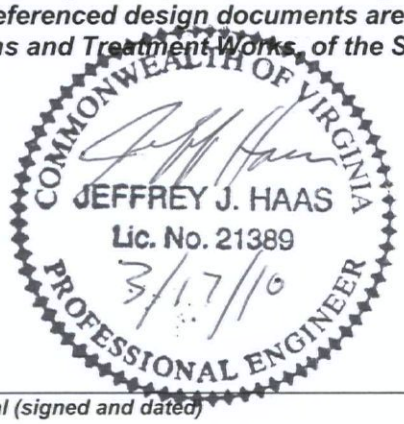
Please check the appropriate components of your project:

Gravity and/or Vacuum Sewer	☒	New Sewage Treatment Plant	☐
Pump Station(s)	☒	Modification of Existing Sewage Treatment Plant	☒
Force Main(s)	☒	Expansion of Existing Sewage Treatment Plant	☐

For Reclamation or Satellite Reclamation System, Attach Page 2: Page 2 Attached? Yes ☐ No ☒

The following statement must be signed and sealed by the Virginia licensed design engineer:

"As discussed in 9 VAC 25-790-240.C., the referenced design documents are in substantial compliance with Part III - Manual of Practice For Sewerage Systems and Treatment Works, of the Sewage Collection and Treatment Regulations (9 VAC 25-790-310 et seq.)"



Licensed Design Engineer's Signature and original seal (signed and dated)

☐ **Design exceptions and justifications are attached in accordance with 9 VAC 25-790-240.C.**

For DEQ use only:

In accordance with the *Code of Virginia* 1950, as amended, Title 62.1, Section 62.1-44.19, this form, signed by the appropriate DEQ representative, constitutes your Certificate to Construct. This Certificate is valid for a period of five years from the date of issuance. Other permits and authorizations may be necessary. Please contact your Regional DEQ Office if you have any questions.

Name	Signature	Date	CTC PTL Number
Curtis J. Linderman		4/16/10	24845

Department of Environmental Quality Authorized Representative

Note: Once the project is complete, an application for a Certificate to Operate must be submitted to the appropriate DEQ Regional office.

Project Description

The project consists of the renovations to the existing sequencing batch reactor (SBR) type wastewater treatment process with new equipment and controls to meet the nutrient limits in the VPDES Permit No. VA0023469. The renovations include influent screening, influent metering, influent equalization, SBR treatment, denitrifying filters, aerobic sludge digesters, sludge dewatering equipment and building. For reliability classification, the treatment system will have three emergency power generators for maintaining the entire treatment process in operation in the event of a loss of commercial power. The control system will have computerized monitoring of the treatment system alarms to the operators control building.

At the existing Unit 17 treatment facility, the work includes a new pump station with two pumps rated for 85 gpm at 30 ft, and 1,500 lf of 6" force main to deliver the wastewater to the renovated SBR treatment plant. The existing oxidation ditch treatment facility at Unit 17 will be demolished.

The work also includes 1200 lf of 6" and 8" gravity sanitary sewer and a 1000 gallon grease trap for the correctional facility kitchen.

Reliability Classification
Worksheet for Sewage Pumping Stations

Pump Station Name: Upgrade Haynesville Wastewater Treatment Plant

Location: Haynesville Correctional Center

Average Daily Design Flow/ Peak Design Flow (MGD/MGD): 0.178

Complete Part I and Part II of this form, and submit this form with your CTC application. All assessments are based on the average daily design flow of the pump station (not peak flow or current flow).

Part I. Reliability Classification Assessment

1. Is the station located in the Dulles Watershed (9 VAC 25-401) or in the Occoquan Watershed (9 VAC 25-410)?
   - ☐ If yes, STOP - Reliability is Class I with special construction requirements (see 9 VAC 25-401 and/or 410).
   - ☒ If no, proceed to Question 2.

2. The default Reliability Classification for all other pump stations within Virginia is Class I. Is the pump station to be constructed to meet Reliability Class I?
   - ☒ If yes, STOP - Reliability is Class I.
   - ☐ If no, proceed to Question 3.

3. Is the design average daily flow to the pump station greater than or equal to 0.5 MGD?
   - ☐ If yes, STOP - Reliability is Class I.
   - ☐ If no, proceed to Question 4.

4. Is the pump station located in the any of the following localities? **Counties** of Accomack, Charles City, Essex, Gloucester, Isle of Wight, James City, King and Queen, King George, King William, Lancaster, Mathews, Middlesex, New Kent, Northampton, Northumberland, Richmond, Southampton, Surry, Westmoreland or York; or **Cities** of Chesapeake, Franklin, Hampton, Newport News, Norfolk, Poquoson, Portsmouth, Suffolk, Virginia Beach or Williamsburg.
   - ☐ If yes, STOP - Reliability is Class I.
   - ☐ If no, proceed to Question 5.

5. Is a public water supply surface water intake within 5 miles downgradient of the pump station or within 1 tidal cycle upstream of the pump station?
   [Contact the appropriate field office of VDH's Office of Drinking Water http://www.vdh.virginia.gov/drinkingwater/contacts/. Provide VDH with latitude/longitude information for the pump station and the average and peak design flows.]
   - ☐ If yes, STOP - Reliability is Class I.
   - ☐ If no, proceed to Question 6.

6. If the pump station were to overflow, is there high probability of public contact with the wastewater? [Is the station close to residential/commercial/institutional areas and/or recreational areas (boat landings, posted swimming/fishing/boating areas, parks) such that an overflow would likely present a public health hazard?]
   - ☐ If yes, STOP - Reliability is Class I.
   - ☐ If no, proceed to Question 7.

7. Is average daily design flow to the pump station < 2000 gpd?
   - ☐ If yes, STOP - Reliability is Class II.
   - ☐ If no, proceed to Question 8.

8. Is there a perennial surface water located within 1500 ft downgradient of the facility? (Perennial stream defined as a solid blue line on USGS quad map or determined from field investigation.)
   - ☐ If no, STOP - Reliability is Class II.
   - ☐ If yes, proceed to Question 9.

9. Does the perennial surface water considered in Question 8 above provide less than a 10:1 dilution (7Q10 receiving water flow to average daily design flow); OR is the perennial surface water a 303d listed impaired segment? [See www.deq.virginia.gov/wastewater/ for location and list of stream gauges, 7Q10 information, and 303d listings]
   - ☐ If yes to either of the questions, STOP - Reliability is Class I.
   - ☐ If no, STOP - Reliability is Class II.

Based on the Part I assessment, the designated reliability classification for this pump station is Class I
Note that DEQ has determined that Reliability Class III is not protective of water quality and is not a valid classification for a new pump station.

Part II. Method of Complying with Reliability Classification

For this pump station, select your method of complying with the reliability class requirements.
Reference 9 VAC 25-790-390 through 420.

Reliability Class I:

☒ Option A: Emergency generator with automatic transfer switch or dual electrical feeds. Class I must monitor main power supply, auxiliary power supply, failure of pump to discharge, and high liquid level in wet/dry wells; a test function must also be provided. On-site audio-visual alarm required with telemetry or autodialer to site manned 24 hours a day.

☐ Option B: 24 hour emergency storage. Class I must monitor main power supply, failure of pump to discharge, and high liquid level in wet/dry wells; a test function must also be provided. On-site audio-visual alarm required with telemetry or autodialer to site manned 24 hours a day. (24 hour storage based on average daily design flow.)

☐ Option C: Closing the facility to eliminate generation of sewage. On-site audio-visual alarm required with telemetry or autodialer to site manned 24 hours a day. (Only available to facilities that will close during a power outage such as schools, certain industries, some recreational and park areas.)

☐ Option D: [Only available for facilities to be owned and operated by a locality, utility, or service authority.] Wet well storage above the high water alarm equal to or greater than documented response time of owner/service provider. Owner/Service Provider has sufficient portable equipment (see 9 VAC 25-790-410 for details). Portable pump and/or portable generator hookup provided. Class I must monitor main power supply, failure of pump to discharge, and high liquid level in wet/dry wells; a test function must also be provided. On-site audio-visual alarm required with telemetry or autodialer to site manned 24 hours a day.

☐ Option E: For facilities in the Dulles Watershed Only: In addition to complying with Reliability Class I requirements in 9 VAC 25-790, the facility also complies with 9 VAC 25-401-30.D.

☐ Option F: For facilities in the Occoquan Watershed Only: In addition to complying with Reliability Class I requirements in 9 VAC 25-790, the facility also complies with 9 VAC 25-410-20-F.5.

Reliability Class II:

☐ Option A: Portable/standby generator (manual transfer switch or quick connect). On-site audio-visual high water alarm.

☐ Option B: Emergency pump connection (and access to a portable pump). On-site audio-visual high water alarm.

☐ Option C: Closing the facility to eliminate generation of sewage. On-site audio-visual high water alarm. (Only available to facilities that will close during a power outage such as schools, certain industries, some recreational and park areas.)

Form to be completed and signed by Design Engineer.

Form completed by _____(signature)

Printed name Jeffrey J. Haas

4. Treatment System Design Parameters

The influent data indicated in the following table are summarized design values assumed from the existing records from the monthly laboratory testing and supplemented with additional testing for this and other studies performed at the facility. The effluent discharge limits listed in the following table became effective July 8, 2005 in the current discharge permit with the exception of the nitrogen and phosphorus limits. Nitrogen and phosphorus limits of 4.0 mg/L and 0.3 mg/L respectively will become effective when the general wastewater discharge permit is issued under DEQ Regulations. The waste load allocation for nitrogen and phosphorus is based on the increased treatment plant capacity of 0.230 MGD.

Table 3 - Treatment Plant Parameters

PARAMETER	INFLUENT	EFFLUENT
FLOW	0.23 MGD	0.23 MGD
BOD5	400 mg/L	15 mg/L
TSS	600 mg/L	15 mg/L
NITROGEN	Not Available	*NL / 4.0 mg/L
AMMONIA	12 mg/L	0.32 mg/L
PHOSPHORUS	3 mg/L	*2.0/0.3 mg/L
COPPER	40 ug/L	4.6 ug/L
ZINC	200 ug/L	Monitor
CADMIUM	Not Available	0.67 ug/L
SILVER	Not Available	0.49 ug/L
pH	8.2	6.0 – 9.0
** HARDNESS	+/- 25 mg/L	150 mg/L

* Two parameters indicated, second number represents the ultimate limit based on the general VPDES permit.

** Hardness is being proposed as an alternative for the metals limit in accordance with 9VAC 25-260. A modification to the VPDES will be required to request a hardness limit.

Attachment H.

Application Waiver

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY
Piedmont Regional Office

4949-A Cox Road, Glen Allen, Virginia 23060 804/527-5020

TO: Curtis Linderman, PRO Water Permits Manager
FROM: Denise Mosca, PRO Environmental Specialist II
DATE: April 16, 2009
SUBJECT: Request for Application Waivers - Haynesville Correctional Facility VA0023469
COPIES: File

Facility Description:
The discharge from Haynesville Correctional Facility consists of the 0.15 MGD discharge from the SBR at the medium security Correctional Institution and 0.028 MGD from the oxidation ditch at Unit 17. The discharges join at the effluent flow meter/cascade steps and continue together to the dry ditch outfall which is the unnamed tributary to Garland's Mill pond. The permit expires July 7, 2010 and the facility is in the process of putting together their application for reissuance.

Request for Waivers:
The Department of Corrections (DOC) is requesting two waivers from Form 2A requirements for submitting 3 results each for Oil and Grease and Total Dissolved Solids (TDS) because the permit does not require monitoring for these parameters and it would be a cost savings for the DOC to not provide them. One result for each has been submitted. The Oil and Grease result is <10 mg/, and the TDS value is 558 mg/l. The previous application requested a waiver for Oil and Grease which was denied due to the presence of food preparation activities onsite. The DOC submitted three results in 2003 (one in Sept. 2003 which was <5.00 mg/l and two in May 2003 which were < 5.00 and 18.7 mg/l). DEQ does not have a standard for this parameter. An internet search yielded the oil and grease concentration that produces a sheen to be anywhere from 10 to 20 mg/l. Because the 18.7 mg/l value in 2003 is at the high end of this range, **the recommendation is to deny the oil and grease waiver**. TDS testing is only pertinent to public water supplies because it is only in the event of discharge to a public water supply that DEQ evaluates TDS wasteload allocations. Neither the unnamed tributary to Garland's Millpond nor Garland's Millpond itself are public water supplies. The Haynesville DOC effluent is expected to maintain the general criteria of the water quality standards (9VAC 25-260-20.A); the general criteria is phrased comparably to the description of the TDS numeric standard found in 9VAC 25-260-140. **I recommend that the TDS waiver be approved.**

The recommendations are approved: — for 2010 application only + TDS only (2 samples)

_____ 4/16/09 Date

Phillips, Dallas L.

To: Mosca,Denise

Subject: RE: VPDES PERMIT NO. VA0023469, ESU/HCC

CC: Davis, Wilson

Denise,

I can get you the data that presently exist. I will mail you the analysis sheets since they are not on my computer. We just sampled for Oil and Grease and TDS. I had the TDS redone because we forgot to filter the sample. We will perform that sampling again Monday. I should have all of the data by the end of the week.

All of the sample's test results should be representative for the entire year. There is nothing that I am aware of that would cause any of the parameters that frequency reduction is being asked for that would have test results to vary from season to season at HCC. I have discussed this with Wilson Davis and he agreed that there are no conditions existing that would affect discharge levels from season to season.

Metal's test results on the biosolids remain close each time the landfill testing was performed. I have Certificate of Analysis sheets for some of this Water Quality Monitoring that was performed in December 2005. This data is only a little over three years old. You should have it too. I only mention this to see if it would help with my request. I will include this with the recent data.

I will get you all of this data as soon as I can next week.

Thank you for your consideration in this matter.

Dallas L. Phillips
Environmental Services Manager
VDOC/Environmental services Unit
Eastern Service Area
757-925-2212, ext. 5012
Dallas.Phillips@vadoc.virginia.gov

From: Mosca,Denise [mailto:dmmosca@deq.virginia.gov]
Sent: Friday, February 20, 2009 2:05 PM
To: Phillips, Dallas L.
Subject: RE: VPDES PERMIT NO. VA0023469, ESU/HCC

Hi DL,
Can you attach the data for the one round of samples? Can you state if they would be representative of other samples taken at other seasons? That would make the request stronger.
Denise

Denise Mosca
Environmental Specialist II
DEQ-Piedmont Regional Office
4949-A Cox Road,
Glen Allen, Va. 23060
(804) 527-5027
fax (804) 527-5106

From: Phillips, Dallas L. (VADOC)
Sent: Friday, February 20, 2009 1:56 PM
To: Mosca,Denise
Subject: VPDES PERMIT NO. VA0023469, ESU/HCC

2/20/2009

Denise,

Since receiving waivers on some parameter's frequency while performing VPDES Permit Reissuance Application for other VDOC WWTPs, I would like to make this request for Haynesville Correctional Center (HCC).

On the NPDES Form 2A, Section B. 6. Effluent Testing Data, can the three pollutant scans be reduced to one for Oil and Grease and Total Dissolved Solids (TDS). We have no ongoing data on these parameters since it is not an existing permit requirement. All of the other parameters listed under B.6. are monitored monthly.

On the VPDES Sludge Permit Application Form, Section A., # 8. Pollutant Concentrations, several of the metals listed were recently analyzed for from the biosolids that are disposed of in the landfill. Copper, molybdenum, nickel, and zinc were not required to be tested by the landfill. Can we omit these parameters in this Section? Also, it states that all data must be based on three or more samples. Can the data from one sample be accepted for Section A., 8. since that is all we presently have available.

I am making this request to save cost to our budget as much as possible. Much of this testing is expensive and if lesser frequencies is acceptable, it benefits our budget. We are going to perform testing frequency exactly as you require.

Your consideration concerning this matter is greatly appreciated.

Thank you.

Dallas L. Phillips
Environmental Services Manager
VDOC/Environmental Services Unit
Eastern Service Area
757-925-2212, ext. 5012
Dallas.Phillips@vadoc.virginia.gov

AIR WATER & SOIL LABORATORIES, INC.®
2109A North Hamilton Street • Richmond, Virginia 23230 • Tel: (804) 358-8295 Fax: (804) 358-8297

Certificate of Analysis

Final Report

Laboratory Order ID 09020119

Client Name: Haynesville Correctional Center
P.O. Box 129
Haynesville, VA 22472

Date Received: February 10, 2009
Date Issued: February 16, 2009

Submitted To: Wilson Davis

Project Number: NA

Client Site I.D.: WWTP Outfall

Purchase Order PrePaid MasterCard

Sample I.D.: #1, #2

Laboratory Sample I.D.: 09020119-001

Date/Time Sampled: 02/10/09 08:30

Parameter	Method	Sample Results	Rep Limi	Analysis Date/Time	Analyst
Oil and Grease	EPA1664A	< 10 mg/L	10.0	02/12/09 10:28	MBC
TDS	SM18/2540C	558 mg/L	10	02/10/09 16:13	LMT

Ted Soyars

Laboratory Manager

Mosca,Denise

From: Linderman,Curt
Sent: Wednesday, April 30, 2003 9:04 AM
To: Mosca,Denise
Subject: VA0023469 Haynesville Correctional Center Waiver Request

Thank you for your April 8, 2003 recommendation in response to D.L. Phillips' March 28, 2003 request for a Form 2A testing waiver for Total Dissolved Solids and oil and grease. Your recommendation was to grant the request for TDS, but require at least one oil and grease sample due to food preparation activities occuring on site.

In looking at the supporting documentation, the rationale Mr. Phillips' uses as a basis for his waiver request is that these parameters are not required to be monitored in his current permit, and approval of a waiver would be a cost savings to the facility. While I find these arguments to be inadequate, it is my understanding that the facility does not discharge to a PWS segment where TDS criteria would apply. Thus, TDS data would not be germaine to evaluating the discharge's impact relative to applicable WQ criteria. Consequently, I concur with your recommendation to waive the Form 2A requirements to test TDS for this facility for this permit cycle.

As for oil and grease, I agree with your analysis that the presence of food preparation activities on-site is sufficient reason to support denial of the waiver request for this parameter. However, rather than require only one sample, I believe the waiver request for oil and grease should be denied in full at this point in time. Keep in mind... this denial does not preclude DEQ staff from entertaining a new, subsequent request from the Dept of Corrections, following the submittal of sampling results (preferably a minimum of two), to waive the remaining sample. However, such a request will need to be sufficiently supported on a technical (WQ) basis, especially since there is adequate time remaining to perform all three samples before the November reissuance reapplication due date.

Let me know if you have any questions. Thanks, Denise.

COMMONWEALTH of VIRGINIA

RUFUS FLEMING
REGIONAL DIRECTOR

Department of Corrections
Division of Operations
Eastern Region

157 N. MAIN ST., SUITE C
SUFFOLK, VA 23434
(757) 925-2200

June 6, 2003

Ms. Denise Mosca
Environmental Engineer Senior
Department of Environmental Quality
Kilmarnock Office
P.O. Box 669
Kilmarnock, Virginia 22482

Re: ESU/Haynesville Correctional Center
VPDES Permit Reissuance Application VA0023469

Dear Ms. Mosca:

Attached you will find the additional information needed to process the VPDES Permit Reissuance Application for ESU/Haynesville Correctional Center.

For Form 2A, Item B.6. – Effluent Test Data, Oil and Greasing (O&G) testing has been performed. Two grab samples a week apart were collected from the effluent discharge and analyzed by a contract laboratory. The results of the first test was less than 5.00 mg/1. The reportable value is 5.00 mg/1 and greater. The result of the second test was 18.7 mg/1. The average of both tests using less than 5.00 mg/1 as 5.00 mg/1 is 11.9 mg/1.

a third on sample was taken 9/03 + was <5.00 mg/l

Due to the results of O&G monitoring from the effluent discharge resulting in values that are not considered to be extremely high, I am requesting that you approve a waiver for monitoring for O&G four months from the last monitoring date. This would have to be done in September 2003 if the waiver is denied.

I have also included a copy of a VDOC Receiving Report prepared by our Planning and Engineering Services Unit for the payment of the fee for processing the permit application. DOC's accounting office will prepare an IAT as payment to DEQ.

I have included the results of the Clean Metals Sampling and Testing performed for zinc and copper on the effluent discharge. You will notice that the results were much lower than expected. I know this will hold no bearing on our permit reissuance at this time, but felt it should be mentioned. I have instructed Wilson Davis to have another Clean Metals Sampling